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ORIGINAL ARTICLES.

THE PROPHYLAXIS OF TUBERCULOSIS.

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This communication is based upon the fact, now incontrovertible, that the tuberculous diseases, including pulmonary phthisis, are specific infections due to a common cause, namely, the tubercle bacillus of Koch.

The purpose is to submit certain vexed questions concerning this group of diseases, of which pulmonary phthisis may be taken as a type, to the tests by which the same questions in regard to other diseases, universally admitted to be infectious, have been definitely settled.

These questions are:

1. Is pulmonary consumption hereditary?
2. Is it contagious?
3. Is it preventable?

The solution of these questions is a matter of the gravest consequence to mankind. Whether the facts in our possession at present are sufficient in number and adequate in bearing to enable us to solve them remains to be seen. We are certainly in a position to approach the problem with some degree of confidence. At no former period in the history of medicine has the profession had in its possession in regard to any specific disease whatever such a store of well worked out facts as it to-day holds concerning tuberculosis. This material has been collected by a host of workers in many lands, some of whom have been stirred by the brilliancy of Koch's original discovery, others by the importance of the results of their own labors in this field of pathology, all by the hope of knowledge upon which to base a rational therapeutics and an efficient prophylaxis. That such questions remain unanswered is due to many causes, among which not the least active is that conservatism which demands conclusive proof of the truth of new opinions—a conservatism, which, while it often appears to impede the progress of knowledge, in point of fact, always makes that progress the more sure.

1. IS PULMONARY COMSUMPTION HEREDITARY?

There is no difficulty about the meaning of the term. Racial, national, family characteristics are transmitted with precision from one generation to another. Physical conformation, facial peculiarities, even to little tricks of expression, the gait and bearing, are transmitted from parents to children for series of generations. The same is true of the nervous organization and the mental characters. In the domain of pathology we find the tendency to diseases dependent upon peculiarities of physical organization distinctly transmitted by heredity. Here diseases of the mind and nervous system at once attract attention; so also diathetic diseases, as gout, rheumatism, and the like. Hereditary diseases of this kind are liable to occur at any period of life, but they are especially prone to show themselves at those epochs which bring peculiar strain upon the structures weak by inheritance. Thus certain forms of insanity and functional nervous diseases show themselves at puberty and the menopause; while chronic affections of the kidneys, the skin, or the joints are apt to develop after the middle periods of life when the organs of elimination are habitually over-taxed.

But when we come to study the part played by heredity in the infectious diseases, the conditions are very different. These diseases are not due in any sense to peculiarities of physical organization; they are the manifestations of the reaction of the organism to pathogenic influences from without; they are due to positive specific infection. It is true that the infectious diseases also may be in a certain sense hereditary. They are not rarely congenital. The records of medicine show conclusively that children born of mothers suffering from the fevers, the exanthemata, and other infectious diseases, often show at birth, or shortly thereafter, the characteristic manifestations of the maternal infection. This is especially true of syphilis which Neelsen[1] has grouped along with tuberculosis, enteric fever, and leprosy in fourth group of germ diseases—namely, the mycoses with tissue proliferation or infective ulcers.

Syphilis, like tuberculosis, is a chronic disease,

[1] Archiv. f. Klin. Chir., 1884.

and affords favorable opportunities for the study of the subject of the transmission of an infection by heredity. Thus a syphilitic mother may bear in succession, so long as the infection remains active, several children presenting the manifestations of transmitted syphilis in various degrees of intensity. In these cases a child born apparently healthy, at the end of three or four weeks, without possibility of contagion, and in the absence of the initial lesion of the acquired disease, presents certain definite symptoms, symmetrical in distribution, transitory in duration, typical in evolution, polymorphic, corresponding to the secondary manifestations of acquired syphilis.

Departures from this general rule show themthemselves in two directions; on the one hand, the disease in the mother may cause the intrauterine death of the fœtus; on the other hand, the infant may pass through the secondary stage of inherited syphilis without the manifestation of symptoms which attract the attention of its nurse. Such cases, as Hutchinson[2] has pointed out, are common, and have their exact parallels in the acquired disease. Those, however, who have shown no symptoms in infancy may yet suffer in later life. Such individuals constitute a group of cases described under the term of "late hereditary syphilis."

"It is clearly to be understood, however, that when this happens to adolescents, they suffer from a class of symptoms wholly different from those of infancy. It is not that the secondary stage has been delayed, but simply that it has been passed through without ostensible disturbance. If secondary symptoms of the kind described are to occur at all, they will show themselves in infancy, and, in a vast majority of cases, within the first three months of life.[3]"

Another very important fact in regard to hereditary syphilis must be here noted, namely, that there are no trustworthy data which indicate that the subjects of the inherited taint can in turn transmit it to their children. On the other hand, there is abundant evidence to show that those who have suffered by inheritance may become the parents of children absolutely free throughout life from any manifestations of the disease whatever. Nor is there any warrant for the assumption that such individuals inherit special proclivities to diseases in consequence of the taint of the parents. To again quote Hutchinson[4]: "There is no evidence nor probability in support of the conjecture that syphilis is in the third and fourth generation the cause of any chronic diseases of the skin or of any form of scrofula."

It is important to note, at this point, that in the fevers, the exanthemata, and in syphilis there is general infection by the blood. In each of them the infecting principle has its local point of attack, and rapidly extends to the blood.

Tuberculosis, on the other hand, is, in the large majority of cases, a local process throughout its whole course. When animals inoculated with sputum or other substances containing tubercle bacilli are killed in a short time, the lesions are invariably found restricted to the point of inoculation and the adjoining lymph glands. The tuberculous wart upon the hand of the pathologist is an insignificant local affair, which, after a time, degenerates into a fibrous nodule and then disappears. More serious inoculation wounds in the human subject give rise to local tuberculous ulcers, with implication of the lymphatic system to which the affected tissues are tributary. Gerber[5] accidently inoculated himself by a cut on the left hand in the examination of the lungs of a patient who died of consumption. Swelling of the axillary and infra-clavicular lymphatics followed. These glands, upon being removed six months subsequently by Mikulicz, were found to contain tubercle bacilli. Six months afterwards the patient was in good health and presented no signs of disease of any organ. Gerber has collected a number of cases which show the tendency to the localization of tuberculosis by wound-infection in man.

Tuberculosis of the lymphatic glands, the so-called scrofulous glands, affords another example of the limitation of the process. Such glands do not usually infect the neighboring structures, unless they undergo caseation and softening, and the capsule of the gland has been destroyed by inflammatory ulceration. The modern surgical treatment of superficial lymphatic glands that have become tuberculous, by nucleation is a practical application of our knowledge of the localization of the tuberculous processes.

Joseph Coats[6] has recorded a case in which a remarkable localized tuberculous condensation was found in the lower part of the upper lobe of a child's lung. This condensation was of a mottled appearance, due to the occurrence of caseous areas in the midst of a generally grey or red basis. There were a few isolated areas of tuberculous condensation near the large one and a patch of similar character in the other lung. Other parts of the lung were normal. On opening up the main bronchus on the affected side, there was found a small aperture in its wall communicating with a large caseous gland, which was firmly adherent to the bronchus. The advanced lesions in the gland and the recent lesion of the lungs indicated that the local implication of the lung was caused by the insufflation of virulent tuberculous matter chiefly through the main bronchus of the affected side, to some extent also upon the other.

[2] Syphilis. Lea Bros. & Co., Philadelphia, p. 74.
[3] Hutchinson, opus cit., pp. 94-75.
[4] Opus cit., p. 78.
[5] Deutsche Med. Wochenschr., No. 16, April 18, 1889.
[6] On the Pathology of Phthisis Pulmonalis, London, 1888, pp. 170-172.

I exhibited at the Pathological Society of Philadelphia last year a specimen of tuberculosis of the right pleura, due to the rupture of a tuberculous abscess of the vertebræ, in which there were no tuberculous lesions of the compressed lung of the affected side, nor of the left lung, nor of any other organ. The frequency with which sub-peritoneal tubercles are found in connection with the tuberculous ulcers of the intestines with the evidence of an extension by the lymphatics without tuberculous peritonitis, on the one hand, and of general tuberculous peritonitis without implication of the intestine, on the other, affords a further illustration of the tendency to localization, which is characteristic of the tuberculous processes in general.

This tendency to restriction of the tuberculous processes is also shown in the post-mortem appearances presented by the lungs in pulmonary consumption. Here we find old caseating lesions with extensive necrosis associated with more recent lesions, the distribution of which plainly indicates the extension of the process by means of infection through insufflation of the infecting material by way of the branches of the bronchial system into new portions of the lung and into the other lung. The frequency with which local obselescent tuberculous lesions are found in the lungs of individuals dying at an advanced age, shows that this local process is capable of undergoing resolution *in situ*. The progress from a focus of infection in the lungs to other portions of the lungs is not only by way of the bronchial tubes, but also by way of the lymphatic structures. The extension of the process to the other lung, to the larynx, and to the intestine are also examples of local infection proceeding step by step along continuous tissue surfaces and not by the blood.

In the words of Coats,[7] "Tuberculosis is a process in which surfaces and canals are concerned, and scarcely at all the substance of organs, except in so far as these are penetrated by channels."

The constitutional manifestations of active tuberculous processes are not directly due to the bacilli, but to toxic principles—ptomaines, evolved during their growth and multiplication. Nencki[8] obtained upon chemical analysis of tubercle bacilli substances soluble in alcohol and ether, which when used experimentally upon animals showed the presence of a tetanizing poison. This substance has not been isolated. Bonardi[9] demonstrated in tuberculous sputum alkaloidal organic bases, which, introduced into rats and guinea pigs, rapidly produced remarkable disturbances of the nervous system. This experimenter believes that these organic bases may explain the fever, sweating disturbances, of the nervous organization, and other general symptoms of the disease.

There is no evidence that tubercle bacilli multiply in the circulating blood itself. They unquestionably sometimes enter the circulation through extensive or advanced lesions, and give rise to scattered tubercles in the liver, kidneys and other organs; but nothing like an infection of the blood, such as take place in other general infectious diseases, is encountered, except in that condition known as acute general tuberculosis. Here we have to do with an acute fatal disease of brief duration, corresponding in many respects with some of the specific fevers—a disease which, as Ponfick pointed out, is due to the sudden loading of the blood with tubercle bacilli in enormous amounts. Tuberculous lymphatic glands at the root of the lung may, by extension of the process, give rise to a tuberculosis of the thoracic duct. Acute general tuberculosis develops upon the discharge of a sufficient quantity of the infecting principle into the blood. Weigert[10] has pointed out a more common source of the bacilli in the blood in this infection, namely, caseating tuberculosis of the wall of a vein, not leading to occlusion by thrombosis; and has reported three cases in which the splenic vein was involved, two in which the portal vein, one the hepatic, one the azygos, two the anonyma, one the left internal jugular, one the supra-renal, and one the thyroid. In about half the cases observed the pulmonary vein has been the vessel affected.

It is thus evident that, except in the case of acute general tuberculosis, the tuberculous diseases do not correspond in their pathology with the acute infectious diseases which are hereditary. Furthermore, demonstrable congenital tuberculosis in the human fœtus is among the rarest of pathological conditions; for a long time no example of this condition had been discovered. The view that congenital tuberculosis may be due to the semen or ovum is a pure hypothesis unsupported by proof. The opinion that it may be derived from the maternal blood by way of the placenta rests upon a small number of positive facts. Malvoz[11] found that microörganisms may pass the placenta only when it is diseased. Charrin[12] found in a seven and a half months' fœtus of a tuberculous woman, which died three days after birth, tuberculous lesions of the abdominal organs. Merkel[13] discovered cheesy nodules in the palatine arch, the lymph-glands and in the neighborhood of the hip-joint, but not in the lungs, of the child of a tuberculous woman, which died directly after birth.

It is probable that such cases of congenital tuberculosis are due to acute general tuberculosis of the mother.

[7] Opus cit., p. 192.
[8] Cited by Hammerschlay, Correspondenz-Blatt. f. Schweitzer Aerzte, Oct. 1, 1888.
[9] Trans. Med. Acad. Pavia, March 3, 1888.
[10] Cited by Coats, opus cit., p. 253.
[11] Amer. Pract. and News, Nov. 24, 1888.
[12] See Whittaker, Universal Annual of the Medical Sciences, 1889, Vol. 1, p. A-4.
[13] Ibid.

Baumgarten[14] supports the view that congenital tuberculosis may be latent, with the bacilli remaining inactive in certain cases through years or throughout life, unless called into activity by traumatism or other influences. Should this view be established, it may explain, in certain cases, the presence of tubercle in the lymph glands, bones and marrow; but it will in no way invalidate the argument against the transmission of pulmonary consumption, or intestinal tuberculosis, by heredity.

In regard to the hereditary transmission of tuberculosis among the domestic animals, the statistics of the Berlin abbatoir, cited by Cornet,[15] are not without interest. Among 320,000 calves seventeen were tuberculous; among 398,000 cattle there were not less than 8,000 tuberculous.

In very young children primary infection takes place chiefly by way of the intestine, less frequently by the lungs—facts fully in accord with what is known of the mode of communication of the disease. The conclusion that enteric fever or scarlet fever is hereditary would rest upon very nearly the same basis of fact upon which the doctrine of the hereditary nature of tuberculosis has been assumed, namely, that the parents of those having these diseases have previously suffered from them, and that in a few rare instances the child of an infected mother has shown the characteristic signs at birth.

But it is not upon facts of this kind that the prevalent doctrine is based. It rests upon facts of a wholly different kind—upon facts analogous to those upon which we found our views concerning the hereditary nature of diseases due to peculiarities of physical organization and to the diatheses. Thus Thompson[16], using data obtained from the Brompton Hospital, investigated eighty family histories which were apparently complete. The total number of children in these eighty families was 385, an average of nearly five for each family. Of these, 203 were males and 182 females. Disregarding those who died in childhood, namely, 21 males and 16 females, who may or may not have been affected with tuberculous diseases, there remain 348, of whom 194, namely, 98 males and 96 females, during subsequent life developed pulmonary tuberculosis, leaving 154, namely, 84 males and 70 females, who remained exempt. The assumed inheritance was from the father in 24 cases, from the mother in 30, from both in 14, and from the *grandparents in 12.*

Theodore Williams[17], investigating cases in private practice, found that among persons affected with pulmonary phthisis the disease could be traced to relatives in 48.4 per cent. of the cases.

Hérard and Cornil found that of 100 cases not less than 38 had sprung from parents who had been tuberculous, and suggests that if to this number were added those whose *grandparents had been tuberculous*, we should probably have one-half of all cases showing hereditary predisposition.

This doctrine of heredity, which has constituted a serious obstacle to the general recognition of the infectious nature of tuberculosis, is in point of fact due to the view formerly prevalent, that pulmonary consumption was a diathetic disease, a view to which such terms as "tuberculous diathesis" and "pre-tuberculous stage of consumption," until recently in current use, bear testimony. So long as this view was entertained, statistics like those of Thompson, Williams and others had a certain significance; but if the tuberculous diseases are infectious processes, these statistics are not only wholly without value, but absolutely misleading.

If the thirty-seven children in Thompson's series who died in childhood had certainly died of tuberculous diseases shortly after birth, that fact would have been quite in accord with what we know of the transmission of infectious diseases by heredity; but that 194 of the remaining 348 should at some period of life later than childhood develop an infectious disease in consequence of heredity, is not only not in accord with the recognized laws governing the transmission of the infectious diseases, but absolutely contrary to those laws. How are we to explain the exemption of the 154 who failed to develop pulmonary consumption, and how are we to understand the hereditary transmission of an infection from the grandparents in twelve instances in which the parents escaped?

We no longer speak of the tuberculous diathesis, for we know that it does not exist any more than a typhoid diathesis or a variolous diathesis. Nor do we now speak of a pre-tuberculous stage of phthisis, for we know that patients presenting the symptoms formerly regarded as constituting that stage are in many instances already the subjects of a local tuberculosis, the signs of which have not yet made themselves manifest.

Individuals and families show remarkable variations in their susceptibility to infectious diseases. These variations are most striking in regard to the tuberculous diseases, and it must be admitted that the puny descendants of feeble, elderly or diseased parents, and especially of those who have suffered from tuberculous diseases, show deficient powers of resistance to morbid influences of all kinds and are, therefore, especially prone to tuberculosis.

But this is aside from the question. With certain variations in degree the susceptibility to the infectious diseases is almost universal. Upon favorable exposure to the infecting principle a large majority of individuals are liable to contract the continued fevers, the exanthemata, syphilis

[14] Lehrbuch der Pathologische Mykrologie, 1887.
[15] Berliner Klin. Woch., No. 15, April 15, 1889.
[16] Family Phthisis, 1884.
[17] Medico-Chirurgical Transactions, 1871.

and other infections. We do not on this account, however, permit ourselves to think of these diseases as being hereditary; nor do we in any way attach importance to the hereditary nature of the common predisposition to them. Our mode of thought in regard to these diseases, and especially in regard to the relation of the whole subject of preventive medicine to them, is unhampered by considerations of this kind. In regard to the tuberculous diseases, however, the doctrine of hereditary predisposition is a stumbling block constantly in the way. It impedes us at every turn. It prevents the general recognition of the simple fact that the tuberculous diseases are infectious, against which an efficient, organized and hopeful prophylaxis not only might be, but ought to be, generally carried into effect.

We may affirm that pulmonary consumption, subjected to the tests by which we determine the question in regard to the infectious diseases in general, does not appear to be hereditary in the ordinary sense, and that the congenital predisposition to the tuberculous diseases is much less general than to several other infectious diseases, notably the eruptive diseases of childhood.

2. IS PULMONARY CONSUMPTION CONTAGIOUS?

Those diseases are generally understood to be contagious in which an infecting principle, emanating from the body of the sick and gaining admittance to that of a healthy and susceptible individual, is capable of giving rise to the original disease. The mode of access from the sick to the well may be either direct or indirect, and varies with the different diseases. Thus, in syphilis we have a contagious disease communicable both by direct and indirect contact, and not otherwise; in enteric fever, a disease transmitted chiefly by contaminated drink or food; in typhus, measles and pertussis, by emanations from the body of the sick conveyed through the medium of the atmosphere.

Tuberculosis is communicable by all three methods. It was for a long time supposed that the direct communication of these diseases in the human subject by inoculation was exceedingly rare; but since 1883 a large number of unquestionable instances, of which the case of Gerber, above referred to, is an example, have been recorded. Many of these have been, like that of Gerber, due to post-mortem wounds. Others have occurred in washerwomen from the inoculation of the hands by infective matter contained in the handkerchiefs and clothing of tuberculous patients.

A number of cases have occurred during the performance of the rite of circumcision by individuals suffering from pulmonary phthisis.

It is hardly necessary to refer, in this connection, to the experimental inoculation of animals by pathological discharges containing tubercle bacilli, or by pure cultures.

There is no question at present that tuberculosis may be acquired by the use of infected food, the principal article being the milk of tuberculous cows, especially that of those suffering from tuberculosis of the udders and teats. Whilst the flesh of tuberculous animals, especially when properly cooked, is not liable to cause tuberculous diseases in those who partake of it, there is abundant proof of the fact that tuberculous sputum itself, either alone or mixed with other food, and tuberculous viscera, will give rise to tuberculosis in animals that eat them, either by chance or to whom they have been administered experimentally.

The primary infection by way of the intestinal tract, frequent as it is in childhood, is notably less common than infection by way of the respiratory surfaces.

It has for some time been suspected that the spread of pulmonary phthisis is largely due to the inhalation of particles of dried sputum, or other material containing tubercle bacilli or their spores, disseminated through the atmosphere. This suspicion, which long lacked the support of definite facts, is now fully confirmed. Cornet[18] has shown that dust collected from the walls of 147 different hospitals, insane asylums, private houses occupied by consumptives, and from crowded streets, contained in forty instances tubercle bacilli; in sixty-nine it was, however, free from them; and in the remainder, the death of the animals used in the experiments being quickly brought about by the action of other bacteria, the result was not conclusive. The dust from twenty-seven rooms not occupied by consumptives showed no tubercle bacilli. Even in the apartments of severe cases bacilli was not discovered, save in those instances where the patients expectorated into handkerchiefs or upon the floor; and in no case did the dust of the walls prove to be infectious where spitcups were habitually and exclusively used, although tubercle bacilli were abundant in the sputum.

Later investigations by Cornet[19] strongly support the conclusion that infection occurs chiefly through dried sputum floating in the atmosphere and drawn into the lungs by the inspired air.

The results of experimental studies in regard to the etiology of tuberculosis are opposed to the generally accepted view that the lungs are the seat of an especial predilection for the development of the tubercle bacillus. The preponderance of pulmonary consumption over other forms of tuberculosis is to be explained by the greater exposure of the organs of respiration to the infection.

The experiments of Naegeli and others show that air passing over a moist surface does not take up bacilli or spores. For this reason, Cornet con-

[18] Zeitschrift für Hygiene, V. Band.
[19] Berliner Klin. Wochschr., 1889, Nos. 12, 13, 14, 15.

cludes that it is absolutely impossible for the air passages, tuberculous cavities, or the expectoration, so long as it remains moist, to render the expired air infectious. It must be admitted that under very exceptional circumstances the consumptive becomes dangerous by means of his moist expectoration, and the relation between the young infant and the consumptive mother or nurse affords peculiar opportunities for this means of communication. The writer has at present under observation an infant suffering from pulmonary and intestinal tuberculosis, developed at the age of 3 months, who was at that time taken care of by a phthisical nurse, who was in the habit of placing the nipple of the nursing-bottle in her mouth, to test the temperature of the milk before administering it to the child. The older sister of this child, its parents, and grandparents upon both sides, are living, absolutely free from the evidence of tuberculous disease of any kind, and in good general health. When, however, the expectorated matters become dried, they are capable of dissemination through the atmosphere in the form of fine dust bearing bacilli and spores. Dessication is a necessary requirement, and the most favorable conditions for such dissemination are found within doors. Wet weather and a moist atmosphere are unfavorable. The fact that the disease is most frequent in crowded quarters supports the view of the dissemination by means of the dried sputum.

Flick's[20] investigations in Philadelphia, which showed that 90 per cent. of infected houses had an infected house adjoining them, and that 33 per cent. of the infected houses supplied more than one case, warrant the conclusion that consumption is communicated by contact, by association, or by living in close proximity. This observer has pointed out the important fact that pulmonary phthisis conforms to the laws which govern the spread of contagious diseases in other respects. The grouping of the cases is the same, and the localization is influenced by the age of those predisposed to the disease. Consumption prevails in circumscribed epidemics, which, for the reason that the disease is of long duration, are less noticeable than epidemics of the ordinary contagious diseases which run their course rapidly. In a later article, Flick[21] has published investigations which shed much light upon the subject of house epidemics, and the persistence of the infection in houses.

Liebermeister[22] supports the view of the communication of the disease by the dissemination of dried sputum, and has observed many cases where previously healthy families became infected, one after another, after removal to a house formerly occupied by a tuberculous patient. From this point of view, the infection of several members of a household previously free from the disease, in the course of a few months or years after the introduction of a case, becomes intelligible. So also the development of the disease in married couples, and in those who nurse relatives suffering from it.

The high percentage of mortality from consumption in prisons, 30 to 40 per cent. of the total deaths, and in cloisters, often exceeding 50 per cent. among persons collected from all quarters, finds ready explanation in the doctrine of contagion.

Cornet[23] has shown by an elaborate analysis of statistical material supplied by the official records of the German Government that the opinion, very generally entertained, that nurses are not especially liable to tuberculous infection, is incorrect. The records investigated relate to thirty-eight cloisters, and extend over a period of twenty-five years. Among 2,099 deaths, almost two-thirds, namely, 1,320, or 62.88 per cent., were due to tuberculosis. He further shows that the general death-rate is remarkably increased among the nurse classes in the cloisters, and that the age of greatest mortality among nurses in general is very much earlier than in other occupations, namely, ranging from the twentieth to the fiftieth year of life, and that the principal agency in determining these results is the dominant prevalence of tuberculosis. The other infectious diseases, especially enteric fever, occupy a second place.

The enormous prevalence of tuberculous disease among monkeys, and other animals confined in zoological gardens, must be attributed to contagion. These animals are not subject to the tuberculous diseases in their wild state, and therefore bring into captivity no special hereditary predisposition, but simply a general liability to tuberculosis.

The researches of Cornet show that the distribution of the tubercle bacillus is by no means so wide as it was formerly thought to be. Koch has shown that, aside from artificial culture, it is capable of growth and multiplication only in the bodies of men and animals. The fact that it retains its vitality for an indeterminate, but for a long period of time outside of the body, is well recognized.

Developed in animal organisms, it is eliminated from them, and disseminated, only by means of the discharges containing it. It is ordinarily found, therefore, as Cornet has abundantly proved, only in the immediate neighborhood of tuberculous men and animals; and the development of morbid processes, which are due to it, and it alone, can be accounted for in no other manner than by its direct or indirect transmission from an infected to a healthy and susceptible animal organism.

To sum up, the tuberculous diseases respond

[20] The Contagiousness of Phthisis, Phila., 1888.
[21] The Times and Register, June 1, 1889.
[22] Deutsche Med. Wochschr., June 18, 1888.
[23] Zeitschrift für Hygiene, Band vi, 1889.

in every important particular to the tests by which we determine the contagiousness of the other infectious diseases. Tuberculosis is transmitted by inoculation, by direct contact, by means of food and drink ingested; finally, by means of the inspired air.

The more serious objections that have been urged against the view of the contagiousness of these diseases, and especially of pulmonary consumption, are due to the influence of the long prevalent view that they were manifestations of an hereditary diathesis; to the fact that until within a few years their infectious nature, now demonstrated, was unknown; and finally, to the immunity of a large proportion of individuals in communities where they are rife. This last objection loses much of its force in view of the definite facts recently brought to light in regard to the restriction of the tubercle bacillus to the neighborhood of infected individuals, and in regard to its mode of dissemination.

3. IS PULMONARY CONSUMPTION PREVENTABLE?

If pulmonary phthisis were hereditary in the ordinary sense, any hope of preventing it would be chimerical. If the views hitherto entertained in regard to the peculiar manner of its hereditary transmission can be shown to be correct, even the theoretical possibility of diminishing the extent of its prevalence would be beyond hope. What measures of prophylaxis could be exerted against the transmission and spread of an hereditary disease, capable of showing itself at any period of life, in individuals presenting from childhood all the appearances of health? or against a disease, not only liable to transmission to the third or fourth generation among those suffering from it, but liable to be transmitted through a generation or two entirely free from it?

The recognition of the infectious nature of tuberculosis deprives views of this kind of even the semblance of truth, while increasing knowledge of its pathology restricts the part played by heredity, in the transmission of the disease, to extremely narrow limits. As, however, the importance of heredity diminishes, that of contagion asserts itself more strongly in the face of cherished traditional beliefs and deeply rooted prejudices. In contagion alone can we find a consistent theory of the spread of the disease, and an intelligible explanation of the very facts to account for which the theory of heredity has been strained beyond reason.

The offspring of tuberculous parents, who are born manifestly tuberculous, die in a short period, and are not likely to communicate the disease. It has been asserted that children of tuberculous parents, born with latent tubercle bacilli, may suffer later in life from tuberculosis of the marrow, bones, and lymph glands. It is more probable that such persons have acquired the infection in infancy, and that its latency is due to a high degree of individual immunity. Even accepting the view of Baumgarten, this group of cases does not constitute a danger of the spread of tuberculosis so long as discharging lesions are absent. Direct inoculation, as in kissing, using the same handkerchief, and so on, is probably a rare accident, and is likely to become more so as its danger becomes more widely known. This, however, is especially a danger to the infant cared for by a tuberculous mother or nurse.

Direct inoculation by sexual approach in cases of genito-urinary tuberculosis is a theoretical danger not supported by recorded facts. The urine and fæces in cases of tuberculosis of the kidneys and bladder and of the intestines, are, owing to the disposition of such discharges and the scanty bacilli which they contain, not sources of danger. The same may be said in regard to the discharges from tuberculous sinuses. Inoculation, by way of superficial lesions of the skin, of the hands of washerwomen is an occasional occurrence. All these methods of communication are obvious and are easily preventable; they are of secondary, almost insignificant, account in the etiology of the disease.

The chief avenues of contagion are the digestive and respiratory tracts. Tuberculosis is acquired by infected food, and by the inhalation of air containing tubercle bacilli and spores. Communication by these methods is recognized only upon careful scientific demonstration. It is preventable only by concensus of opinion and concerted action in any given community. Individual effort is practically without effect. Notwithstanding the fact that in theory the spread of pulmonary phthisis is preventable, it remains to be seen to what extent it may be carried out in practice. Those will accomplish most in the work who most clearly realize the fact that in the tubercle bacillus we have the entity which constitutes the infecting principle. The rigid inspection of all cows in dairies and of all animals slaughtered for food, and the destruction of those found to be infected, would constitute the chief measure of prophylaxis as regards the infection by food. A second measure of much importance would be the systematic care of all milk until consumed, preventing all access of air or dust to it; and regulations against the employment of consumptives in dairies, meat shops, and other places where food is prepared and sold.

Measures of prophylaxis of this kind would come properly under the care of the Government, and uniformity and efficiency throughout the whole country could be secured only by the action of the General Government of the United States.

Reduced to its simplest form, the problem of prophylaxis against the spread of the tuberculous diseases among human beings consists in the

proper care of the fresh expectoration of consumptives. Not dangerous when moist, it becomes, when dried, a fruitful—in fact, the chief means of the spread of the disease from the lesions of which alone it is derived. The sputum of those suffering from pulmonary phthisis should under all circumstances be collected in suitable vessels, and kept in a moist condition, until it is either destroyed by fire or discharged into sewers under such conditions as will insure its conveyance to places where it is not likely to become a source of danger. Spitting upon the floor or in the street, or into handkerchiefs or towels should in all instances be avoided. Patients should be required not only to use in their rooms and in the house a suitable cuspidor, but to carry with them pocket spitcups in which to collect the discharge.

A cup has recently been devised, and is sold in the shops in this country, which consists of a small metal frame in which a folded paper cup is set. When a quantity of sputum has accumulated, the paper can be removed and burnt with its contents. Detweiler[24] has designed a pocket spitcup or flask to meet the uses of consumptives. It is of glass, flat in shape, with metal fittings tightly closing.

Want of space stands in the way of an extended discussion of the details of the prophylaxis, the object of this paper being simply to indicate the general principles upon which it is to be based. The subject has, however, since the publication of Cornet's important communications, attracted widespread attention. A series of regulations have been issued by the President of the Police Board in Berlin,[25] and a report, embodying the general facts bearing upon the matter, and a practical set of rules, drawn up by Prudden, Biggs, and H. P. Loomis, Pathologists of the New York City Health Department, has been transmitted to the Board of Health of New York.[26]

These gentlemen refer to a fact which may act as a motive to consumptives not otherwise inclined to follow out obvious measures of prophylaxis. The fact is expressed in the following terms: "An individual, who is well on the road to recovery, may, by self-inoculation, if he do not with the greatest care destroy his sputum, diminish greatly his chances of recovery."

The early recognition and treatment of pulmonary consumption constitutes in itself an important measure of prophylaxis as tending to circumscribe or retard the extension of the lesions and thereby diminishing the amount of expectoration. In this connection it is necessary to allude to the importance of communicating to the patient the true nature of his disease at an early date. Much is to be gained, not only on the part of the patient, but also on the part of the public, by the disuse of the conventional euphuisms, "slight bronchitis," "local trouble," etc., by which it has been customary to conceal as long as possible from the patient and his friends the true nature of his complaint. As the question stands to-day, the ease of diagnosis, the hope of cure in a considerable proportion of the cases, and the necessity of individual and general efforts of prophylaxis render such a course imperative. Nor need the knowledge of the nature of his trouble bring dismay to the patient nor demoralization to his household. He should be made to understand from the beginning that, though a source of danger to his friends, he is only a source of danger in proportion as he neglects the precautionary measures by which danger may be effectually averted.

It is not to be hoped that even the widespread recognition of the mode of communication of tuberculous consumption and the means by which its spread may be prevented will be followed by any very rapid diminution in the prevalence of the disease. We have seen in late years the beneficent results of antisepsis in the diminution of surgical infections and puerperal diseases. The hope that the frightful prevalence of pulmonary phthisis may in the near future be restricted is no longer the vain dream of the visionary; that hope now rests upon a scientific basis, and its realization constitutes to-day the most serious practical problem of preventive medicine.

DR. STOCKTON took issue on one point, *i. e.*, diathesis. He had observed a single case of tuberculosis occurring in an orphan asylum, in which no other child was ill. Why should this child be the subject of an attack? There must have been some lack of resistance. It seems so evident that there is something besides mere contagion that the cause may be classed, 1, contagiousness; 2, non-resisting soil.

DR. SOLLY thought he had seen in Colorado strong evidences of the contagious character of tuberculosis. He found it occurring in all individuals, and that it would attack any one upon the slightest exciting cause.

DR. HERRICK thought that the question ought not to be accepted absolutely as it is by the profession. There still seem a large number of facts inexplicable. It may be due to mental deficiency on his part, but it will require a great deal of additional proof to make him believe that the disease is contagious. Has it stood the test of therapeutics—have we made any advance in discovering a specific antidote for any disease?

DR. S. SOLIS-COHEN said that the last speaker need not fear being accused of mental deficiency so long as the greatest medical mind of the century, Dr. B. W. Richardson, of London, occupied the same position of wholesome skepticism. It would be a mistake to assume that the infective action of microbic parasites is the sole cause of

[24] Therap. Monatshefte, May, 1889.
[25] Medical News, May 25, 1889.
[26] Medical Times, June 8, 1889.

consumption. There are other parasites—the entozoa, which, descending from non-parasitic organisms, have through the circumstances attending their evolution taken upon themselves the parasitic cycle. As Dr. Vaughan's investigations proceed in the one direction to determine in what way bacteria are toxic, so we may look in the other direction to see which preceded chronologically, the microörganism or the disease, alike in the life of the individual and in that of the race. May we not conceive that their evolutionary history is like that of the entozoa—that, originally innocuous, they found in the degenerated tissues of disease a favorable environment, and thus took up their parasitic cycle, gaining perhaps a certain power of carrying infection. I do not deny their infective power, but I do submit that the evidence of their sole power of originating disease is not conclusive. The evidence as to consumption seems to me to indicate an hereditary diathesis, an heriditary failure of nutrition, and that upon this bacillary tuberculosis becomes engrafted as an epiphenomenon.

Dr. John A. Cutter said: Till bacteriology cures consumption, it cannot take the first place. In the Transactions of this Association for 1880 is an article by my distinguished father, Dr. E. Cutter. In it are given the records of seventy cases of consumption, twenty-six of which are cures. This paper was based on twenty-four years of practice.

Koch's bacillus was known to be associated with vinegar yeast thirty years ago by cryptogamic botanists. It is found in lager beer drips, bread, etc. In blood it is found with the spores of vinegar yeast, which by their size and chemical action produce tubercle. This statement is based on the examination of healthy and diseased people's blood. To be more concrete: A young woman whose father and sister had died of tuberculosis and whose uncle had been cured of this same disease sent us some sputum two years ago, and in it were found elastic and inelastic lung fibre. We wrote her that her lungs were breaking down, and that she was curable. She went on treatment and has had many ups and downs due to adverse circumstances, but one month ago, her family physician examined her and said "he must succumb to the fact" that "her lung was healed." I am treating cases of consumption right along; I believe they can be cured and do see them cured. I am thankful for all bacteriology has done, but it is young, it does not cure its cases, and as a term it does not cover the ground of blood morphology.

In tuberculosis, the blood has the morphology of sticky, ropy masses of red corpuscles, enlarged fibrin filaments, distended white corpuscles with spores of vinegar yeast, and in the serum are to be seen the same vinegar yeast spores, free and in masses. These masses of vinegar yeast, when detained by the lungs, form by their chemical mechanical action tubercle. This yeast comes from the bowels, and is produced there by the fermentation of starches and sugar.

The treatment aims to stop the fermentation by the feeding of non-fermentative foods and proper medication. The patient is watched by studying the blood, urine and fæces. So long as there are any masses of vinegar yeast in the blood, so long is the patient in danger of lung necrosis. When the blood has become healthy, then nature has a chance to attach the lung and heal it, and it has been our experience that by incessant, ceaseless watching, by most careful diet and medication, even cases with cavities have been cured and are alive to-day.

The greatest value of the study of the blood morphology in consumption is the ability to find positively the spores of vinegar yeast in the blood before there is any cough. Lastly, in cases of great destruction of lung tissue and when death is imminent, the amount of vinegar yeast in the blood is the greatest, some of the masses nearly covering the whole field.

Dr. Wilson, in conclusion, remarked that in reference to Dr. Stockton's remarks he would say that there are cases as incapable of explanation as a single case of typhoid in one locality. The tubercular nature of the disease has been determined. The fact that the view is not favored in all quarters should not stand in the way of its acceptance. Those who do reject the doctrine have none to offer in its place.

MORBID PERFORATIONS OF THE NASAL SEPTUM.

Read in the Section of Laryngology and Otology at the Fortieth Annual Meeting of the American Medical Association, held at Newport, June, 1889.

BY A. B. THRASHER, A.M., M.D.,
OF CINCINNATI, O.,
PROFESSOR OF LARYNGOLOGY IN CINCINNATI POLYCLINIC.

Nearly two years ago my special attention was directed to morbid perforations of the septum narium by meeting with a case in a friend and patient of my own. I had grown to regard nearly all such perforations as of syphilitic origin, but in this case I knew that syphilis did not exist as an etiological factor.

I now give a brief history, bearing on this point, of the cases which have since fallen under my observation in my private practice. My cases at the Cincinnati Polyclinic bear in the same general direction, but I desire more time with these to verify my points before offering my conclusions to the profession. I have endeavored to eliminate from these histories everything which does not in a manner bear upon the etiology of the disease. Through negligence I have at times

failed to record all data, but where there is a doubt as to a fact I leave it unrecorded.

Case 1.—Miss D., æt. 14. Family history renders syphilis probable; has always had delicate health and much throat and nose trouble. Consulted me for aphonia, due to ulceration of vocal bands. Half of epiglottis eaten away by a sloughing ulcer. Large cicatrices over posterior pharyngeal wall, which by contraction had drawn the velum much out of place. Has had pain in the nose, and about one year ago noticed a slight falling of the bridge of the nose. Now has a perforation of septum the size of a silver quarter, embracing cartilage and bone. Both lower turbinates absent.

Treatment local and antisyphilitic.

Case 2.—Mrs. L., æt. 28. Family history good, previous health good; married for two years; had miscarriage eighteen months ago, at two months, from unknown cause; gave birth to a healthy child four months ago.

Was under my treatment for acute follicular tonsillitis one year ago, at which time the septum was intact. Three months ago had pain in nose, more especially about the bridge, with occasional attacks of epistaxis. Her general health at that time was bad, as she made a "bad recovery" from child-bed. She is now feeling better, but has much pain in nose and an offensive purulent discharge from both nares.

Examination revealed a ragged perforation of septum one-half inch in diameter, with necrosis of left lower turbinate. The perforation involved the anterior border of vomer, apparently having begun at the junction of the bone and triangular cartilage.

The family physician, a gentleman of education and large experience, assured me that there was no suspicion of syphilis on either side of the family. The child is perfectly healthy and has never exhibited any symptoms of syphilis. However, to give the patient the benefit of the doubt she was put on constitutional as well as local treatment, and in two months she was about well.

Case 3.—Miss S., æt. 26, a lady of excellent reputation and no family or antecedent trouble pointing toward syphilis. She consulted me for acute follicular tonsillitis. In making my routine examination of nose I discovered a perforation of the cartilaginous septum of the size of a silver dime. The opening had smoothly cicatrized edges except a slight ulceration under a crust adhering to the upper border for one-quarter of an inch. There was a history of occasional "colds in the head," with some mild attacks of epistaxis but no pain in this region. The patient had no previous knowledge of the perforation. The slight ulcer healed rapidly under local treatment.

Case 4.—Mrs. McK., æt. 46. Has two healthy living children, the youngest 12 years of age, and never had a miscarriage. Has had nasal catarrh for years, with frequent and distressing bleeding from nose. Never had any sores in mouth or throat, or any skin symptom.

Family doctor says no syphilis on either side of the family. Consulted me for hypertrophic rhinitis. Examination revealed a small perforation, one-third of an inch in diameter, of cartilaginous septum. The upper posterior quarter of opening was ulcerating. The ulcer healed slowly under local treatment alone.

Case 5.—Mr. H., æt. 28, married; one healthy child 2 years old. Wife has had no miscarriages. Has never had syphilis, "although would not hesitate to tell me, if true." Has been troubled for two or three years with a crust forming over the septum, which he had been accustomed to remove by picking with his finger-nail. The removal in this manner was occasionally followed by slight hæmorrhage. There was now a perforation as large as a goose quill of the cartilaginous septum, the posterior edge of which was slightly ulcerated, the ulcer being covered with a dry crust. There was no pain felt at any time in this region. The ulcer healed rapidly under local treatment.

Case 6.—Mr. S., æt. 27, single. General health good; no history of syphilis, or any of its symptoms. For a year has had crust formations over left side of septum, which he has been in the habit of picking off with his finger-nail. Pain has never been a feature of the case. Examination revealed a dry brown crust on the cartilaginous septum. The removal of this crust disclosed an ulcerating surface half an inch in diameter, sloping in gradually from the circumference until the centre had penetrated two-thirds through the cartilage. The ulcer healed slowly, and in three months cicatricial tissue covered the depression made by the eroding ulcer. The treatment was simply local.

Case 7.—Mr. H., æt. 31, married; two children, both healthy; never had syphilis. Consulted me for hypertrophic rhinitis. On examining the nose I discovered a perforation one-third of an inch in diameter of the cartilaginous septum, which he thought he had caused by picking the nose too much. There was no ulceration at the time, nor during the two following months, when he was under treatment for the hypertrophied turbinates. There had never been any pain in connection with the case.

Case 8.—Mr. S., æt. 26, single; family history tubercular. Six years ago had several chancres which he called syphilis. Took medicine for three months and has never had any other symptoms of this disease. Has had occasional attacks of epistaxis for years and crust formations in nose, which he had involuntarily removed with his finger-nail. Examination revealed a small perforating ulcer of cartilaginous septum. There had never been any pain connected with the ul-

ceration. The ulcer rapidly cicatrized under local treatment.

Case 9.—Mr. McC., æt. 46, married, with three healthy children; family history good; general health perfect; no probability of syphilis. Consulted me for irritation of throat of short standing. Has had occasional brief attacks of bleeding from nose. Examination revealed a ragged perforation half an inch in diameter of cartilaginous septum. He had no idea that there was the least nasal difficulty. The ulcer healed kindly under local treatment.

Case 10.—Mr. K., æt. 44, married and has four healthy children; family history good; never had syphilis or any symptom; was flour inspector by profession, which necessitated snuffing all grades of flour. Consulted me for laryngitis and cough. Examination revealed an opening half an inch in diameter through the cartilaginous septum, with one-quarter of the circumference still ulcerating and covered with brownish crusts. Did not know anything was the matter with nose. The ulceration healed kindly under local treatment.

Case 11.—Mr. P., æt. 50. Consulted me for an acute pharyngitis. I then discovered a small perforation of triangular cartilage of septum, which he claimed had been present "for years." There was no indication or history of hereditary or acquired syphilis. The perforation had never given rise to any trouble.

Case 12.—Mrs. H., æt. 40, widow; one healthy child; no miscarriage. Consulted me for follicular tonsillitis. Routine examination of nose revealed a small perforation of septal cartilage, which she affirms that she distinctly remembers was present when a child "under ten years old." She remembers to have examined other children at that time to see whether there was a like condition. No history or evidence of syphilis. It has never created trouble.

Case 13.—Mrs. J., æt. 30; suffering now from constitutional syphilis; has necrosis of bone and cartilage of septum, with destruction of right inferior turbinate; has severe pain over bridge of nose and frontal sinus. Put on constitutional and local treatment.

Case 14.—Mr. W., æt. 31, married; two healthy children; never had syphilis; has been troubled with formation of crusts on septum ever since a youth; has always removed this crust with finger nail; has had no pain, but occasional slight hæmorrhages. Several years ago, while removing this crust as usual, was much surprised and frightened by pushing his nail entirely through the septum, since which time the perforation has slightly increased in size. It has not perceptibly enlarged for three or four years. The slight ulceration at the edge healed rapidly under local treatment, but occasionally he drops into my office with a recurrence.

Case 15.—Miss C., æt. 15; family history good; no suspicion of syphilis. Consulted me for acute follicular tonsillitis. Examination of nose revealed a small perforation of cartilage of septum, of the existence of which she was ignorant. The edges were cicatrized, and of course the condition had occasioned no trouble.

Local treatment in these cases consisted in, (*a*) when necessary, cleansing the surface of all secretions and crusts; (*b*) cauterizing the ulcer with a 25 per cent. solution of argentum nitras, chromic acid, trichloracetic acid, or the galvano-cautery, and (*c*) the application of a mild disinfectant, as Seely's yellow oxide of mercury ointment, 1 per cent. of resorcin in vaseline, or 5 per cent. of white extract of pinus canadensis and 1 per cent. of carbolic acid in vaseline. When there was present necrosed bone, this was carefully removed with forceps and curette. The constitutional treatment was addressed to the supposed underlying dyscrasia.

From an analysis of these cases it will be seen at a glance that three were unquestionably syphilitic; eleven were probably non-syphilitic, and I have placed cases 2 and 8 in the doubtful column. In case 2 the lady's husband was a commercial traveler, and thus might have contracted the disease and conveyed it to his wife without the knowledge of the family physician. The fact that her child is healthy and that she has no other manifestation of the disease speaks strongly against the syphilitic theory. In case 8 there was a history of several small sores, pronounced by a doctor to be syphilitic, a month's constitutional treatment per os, and no subsequent symptoms. The multiple character of the lesion, together with the absence of any following suspicious symptoms, would point toward a soft sore rather than to a Hunterian chancre. However, I place this with case 8 in the doubtful list.

In the three syphilitic cases the perforation involved the osseous as well as the cartilaginous part of the septum; indeed, it is probable that the periosteum was attacked simultaneously, or nearly so, with the soft tissues. In case No. 2, doubtful, were present exactly the same conditions. In each of these four cases one or the other of the turbinated bones had become affected and pain in the bridge of the nose was observed, which symptom was absent in all the other cases. While no pain at all was felt in twelve of the cases, it is well to remark that in no case was there pain in the ulcerated area of the septum. The application of the cautery gave rise to no feeling of pain, showing a well developed localized anæsthesia. In this respect the ulcer might be called lupoid, but the other characteristics of lupus were wanting.

It is true that the number of cases is hardly large enough to give much value to deductions therefrom; yet this is a full report of all private cases of this character coming to my office for

over twelve months. In these fifteen cases which I have the honor to report the following facts will be easily recognized:

First.—A large majority of these cases of perforation of the septum were non-syphilitic.

Second.—The majority of the cases were giving rise to no trouble, and needed but simple local treatment.

Third.—The prognosis in every case was favorable with treatment; in the majority of cases, favorable without treatment.

DR. CARL SEILER, of Philadelphia: I am in full accord with Dr. Thrasher in saying that perforation of the septum is not by any means a symptom of syphilis, but is most frequently caused by either scratching or by the action of chromic acid introduced into the nasal chamber, either in chromate of potash factories, or more frequently by physicians as a means of reducing anterior hypertrophies.

CLINICAL OBSERVATIONS ON SOME CASES OF A PECULIAR CHARACTER.

Read in the Section of Laryngology and Otology, at the Fortieth Annual Meeting of the American Medical Association, June, 1889.

BY CARL SEILER, M.D.,
OF PHILADELPHIA.

For over three years past I have observed a large number of cases which exhibited unusual symptoms, both at the commencement of the disease and during its course, and, as the disease finds its expression as far as I have observed it, mostly in the upper air passages, I may be pardoned for bringing the consideration of this new disease or this unusual variety of an old disease before the Section, although it belongs perhaps more properly before the Section on General Medicine. I must also apologize for the delay in reporting my observations, which delay was caused first by the fact that at the last meeting of the American Medical Association I learned that my esteemed friend Dr. W. C. Glasgow had made similar observations and was preparing a paper on the subject, and that I did not want to anticipate him; and second, I was desirous of getting a better insight into the nature of the disease by further observations. My friend has, however, up to the date of writing disappointed us, for no paper by him on his observations has appeared as far as I am aware, and I feel that I have collected sufficient data to warrant me in calling the attention of the profession to this very prevalent and peculiar disease in a more detailed manner than I did a few months ago in a short verbal communication to the Philadelphia German Medical Society, and in the third edition of my "Handbook on the Diseases of the Throat and Nose." I will not presume to give a name to this apparently new disorder, nor can I give any reasonable etiology to account for its epidemic appearance among all classes of a community and for its widespread geographphical distribution; all I can do is to describe the symptoms as I have observed them in many cases and the result of the treatment instituted to combat them. The symptoms exhibited by, what I consider to be, a typical case of the disorder, are as follows:

The patient, apparently in perfect health, is suddenly attacked by a severe pain of a neuralgic character, most commonly in the back, shooting upward toward the neck and apparently through the trunk to the chest; less frequently this pain is described as a severe otalgia, or it takes the form of severe pain in the arms or legs. Only in very few cases the patient stated that he had had a chill. This pain usually lasts from six to twenty-four hours and then disappears, although I have seen one or two cases where the pain lasted for weeks. During this period of pain no rise in temperature and no acceleration of the pulse is observed, but the patient complains of extreme weakness.

The next symptom complained of, in the majority of cases which I have seen, is a sore throat, which on inspection shows the mucous membrane of the pharynx, velum palati and pillars to be swollen and of a yellowish red hue with here and there streaks of the lighter color. The tonsils appear enlarged and often covered with patches of a thin white film, which closely adhere to the mucous membrane and may remain unchanged for days and even weeks. There is none of the intense redness of the mucous membrane which is seen in the ordinary acute pharyngitis and tonsillitis, and in diphtheritic or croupous inflammation. An incision into the apparently œdematous swelling of the mucous membrane yields no serum but a straw colored tenacious mucoid material which can be drawn out in threads of considerable length. In a few cases I have seen similar swelling and patches of pseudo membrane extending to the larynx, and in one case the only part affected was the subglottic cavity. I have also seen these lesions in the nasopharynx and in the anterior nasal cavities. A removal of the pseudo membranous patches discloses no ulcerated surface beneath, but may cause a slight bleeding of the spot thus denuded. They are at first quite thick and remain for a long time (in one case seven weeks) but become gradually thinner, until at last they greatly resemble a mucous patch on the mucous membrane. They never become discolored nor turn up at the edges and are never spontaneously dislodged and thrown off. An incision does not decrease the swelling of the mucous membrane.

The patient complains usually of but compara-

tively little pain in the throat and deglutition is not as difficult and painful as might be supposed, nor is the dyspnœa in the laryngeal cases, which I have seen, very pronounced, yet there is an anxious expression of countenance as of impending evil and a dulness of the eyes quite characteristic. In many other cases the mucous membrane of the upper air passages is, however, not affected, and the focus of disturbance seems to be located in the alimentary canal or in the mucous membrane of the bronchial tubes. In the first instances symptoms of gastric intestinal catarrh show themselves which often closely resemble typhoid fever. As a specialist I have seen but few cases of the latter class, but Dr. Glasgow, of St. Louis, has seen quite a large number of the abdominal form, and Dr. L. M. Hildreth, of Lyons, Nebraska, in a letter on the subject states that in about 50 per cent. of the cases observed by him (nearly 200) the mucous membrane of the upper air passages was the focus while in the other cases no signs of tonsillitis or pharyngitis were present.

Together with the appearance of the lesions in the mucous membranes a rise in temperature is noticed which not infrequently runs up to 104° while the pulse is but slightly accelerated rarely going above 100. The diurnal exacerbations of temperature occur usually in the middle of the day and night and the fluctuations between the highest and the lowest temperature are very slight, usually not more than one degree. Together with the febrile symptoms loss of appetite is noticed, and the bowels usually become constipated. The back of the tongue is furred with a yellowish fur, but remains moist and the tip and edges are usually clear. The debility increases from day to day until in the severer cases the patient is so weak that he cannot turn over in bed or move his arms.

At the same time, that is about the third or fourth day from the onset of the disease, the glands nearest the seat of the focus of irritation become involved, so that in the pharyngeal form the submaxillary and parotid glands are swollen and hard, and gradually the whole chain of lymphatic glands down the neck become involved.

In some cases suppuration of some of these glands ensues.

I have not been able to observe any definite duration of these symptoms, as they gradually disappear at different intervals of time from the onset of the disorder in different cases, but the tendency is toward a recurrence and an indefinite duration of the weakness of the muscular system. In a few cases of the abdominal form I have noticed a continuance of the rise in the temperature after all other symptoms had disappeared and the pulse rate had returned to its normal standard.

Convalescence is usually very slow, the patient gaining in strength only very gradually, and it often requires many months before his health and vigor are completely restored. The tendency of the disorder is toward recovery or a chronic continuance of some of the symptoms rather than toward a fatal termination, although I have met with two cases of death in about five hundred cases, and Dr. Glasgow has met with a greater number. He was fortunate enough to be able to get post-mortem examinations in some of the fatal cases at the St. Louis Hospital, and found that the only lesion which he could discover was numerous ecchymoses on the surface of the intestinal mucous membrane and no sign of ulceration or enlargement of Peyer's patches. In the two cases which died under my observation I could not obtain the consent of the family to make a post-mortem examination, but the immediate cause of death, to judge from the symptoms immediately preceding the fatal termination, was heart failure. Careful examination of the urine in a large number of cases showed no trace of albumen nor any abnormal condition of the fluid, indicating that the kidneys are not affected. In no case have I observed any sign of paralysis following the pseudo membranous exudation upon the mucous membrane of the tonsils, pharynx or larynx.

I have observed, however, numerous cases of what seems to be a chronic form of the disorder, which exhibited symptoms slightly different from the acute form, inasmuch as there is no swelling of the mucous membrane, nor are there any patches of pseudo membrane, but there is a peculiar yellowish red hue visible particularly on the velum, pillars and posterior wall of the pharynx. The most prominent symptom is extreme weakness and lassitude, together with a slight elevation of temperature and a tendency to neuralgic pains after even the slightest exposure to cold or draughts of cold air. In these cases in which there is a tendency toward relaxation of the nasal turbinated tissue, occlusion of the nasal breathing channels occurs after the slightest mental or physical exertion. Constipation alternates at irregular intervals with slight diarrhœa, and somnolency with insomnia. A very peculiar feature is that in these chronic cases which may have lasted for months, we may see an outbreak of the acute form, with all the symptoms described before. Dr. Bermann, of Washington, has observed two such cases of this recurrence of the acute disorder after several months duration of the chronic form.

As far as I have been able to learn by private information and correspondence with medical friends, the disorder has been observed in every portion of the United States from Maine to Washington Territory, and as far south as New Orleans, and it is not more than three years since it was first observed.

The etiology of this disese, which seems to be un-

doubtedly epidemic, because of the large number of cases observed by individual observers in different localities during a short space of time, is as yet unexplained, and owing to the failure of obtaining any definite results from culture experiments, at least in Philadelphia, I will not venture to express an opinion, except that I am convinced by clinical experience that it is infectious but not contagious.

In regard to the treatment of these cases, very little is to be said. My experience has been that all the drugs usually prescribed in cases similar in nature, together with topical medication are useless or even worse. Quinine, digitalis, aconite, antipyrin, salycilic acid, iron, chlorate of potash, etc., all have either no effect or increase the discomfort of the patient. The only drug which I have used for the last year at the suggestion of Dr. Glasgow, is benzoate of soda, and it has proved in my hands almost a specific for the disorder. Five grains of the benzoate of soda, given every hour, with a tablespoonful of whiskey or brandy every four hours, and absolute rest, will, as far as my personal experience goes, break up an attack of this disorder within forty-eight hours from the onset and restore the patient to perfect health, while in the chronic cases the patient rapidly improves under such treatment. As the benzoate of soda in often repeated doses has of late been recommended by some German writers as a specific for diphtheria, it is possible that this disorder exists also across the ocean, and has there as well as here been mistaken for diphtheria, for in several cases of undoubted diphtheria under my observation the drug was of absolutely no avail.

To sum up, the symptoms of the cases observed by me have been :

1. Neuralgic pains, usually in the back and chest, and often in the head, ears, and limbs.
2. Extreme debility.
3. Mucoid infiltration of the submucous tissue and the formation of thin white pseudo membranous patches on the surface of the mucous membrane.
4. Absence of febrile symptoms at first, and later high temperature and relatively low pulse rate.
5. Absence of albumen in the urine and liability of heart failure.
6. Gradual melting away of the pseudo membranes and the absence of any odor from them.
7. The wide geographical distribution in this country, and the infectious but not contagious nature of the disorder.
8. And, finally, the specific action of benzoate of soda in relieving all symptoms promptly.

Since writing the above, I have learned that Dr. Glasgow has read an exhaustive paper on his observations at the late meeting of the American Laryngological Association in Washington. But as I was unfortunately prevented from being present at that meeting, I am not able to quote from it and am obliged to let this paper stand as the record of independent observations on my part.

DR. THRASHER said he had seen a number of cases which he had not at the time named, which presented symptoms somewhat resembling the cases reported by Dr. Seiler. He was rather of the opinion that he had had to do with a complication or combination of diseases, or even with several entirely different diseases rather than with one uncomplicated affection. Diphtheric poison has at times lodged in the tonsillar lacunæ and remained dormant for a long time. Scarlatina is at times so disguised as to present some such symptoms. He thus thought that after a time, this disease might be separated with two or more distinct affections. Dr. T. had in a few of his cases used salol with apparently good effect.

REPORT OF A CASE OF ECTOPIC GESTATION TREATED WITH GALVANISM.

Read in the Section of Obstetrics and Diseases of Women at the Fortieth Annual Meeting of the American Medical Association, June, 1889.

BY WM. H. TAYLOR, M.D.,
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The great practical importance of extra-uterine pregnancy, and the prominence it now has as a topic for discussion, justify the belief that any contribution, however humble, will be of interest. But, in asking your attention to the details of a case with the above title, it is with the hope that I may elicit information from you, rather than with the thought of imparting knowledge to such a company as now honor me with their attention. I am fully impressed with the fact that the diagnosis of ectopic gestation is difficult, and therefore the first essential interest centres about this point. And, since the experience of one man is not likely to be sufficient to allow him to make dogmatic assertion, I shall preface the report of my case with brief extracts from the latest published utterances upon this subject.

T. Gaillard Thomas, in the "American System of Gynecology," says: "The most reliable rational signs (of ectopic pregnancy) are these, engrafting themselves upon the ordinary signs of a normal pregnancy.

"1. Sanguineous flow of greater or less persistency.

"2. Occasional gushes of blood occurring without assignable cause and disappearing without treatment.

"3. Iliac pain, sometimes extending down the thighs.

"4. Paroxysmal pelvic pain.

"5. Symptoms of abortion attended with expulsion of pieces of decidua, without expulsion of a fœtus.

"6. Recurrent pelvic inflammation suddenly recurring.

"7. As the fourth month is reached symptoms of pressure, as if from a retroverted gravid uterus, frequent micturition, etc.

"If, in a pregnant woman who presents in her symptoms the peculiarities just mentioned, there be discovered in the pelvis a mass of ovoid shape on one side of or behind the uterus, which is slightly movable and tender upon pressure, and which obscurely gives the impression that it contains fluid, the probabilities are very great that ectopic gestation exists. . . . If the passage of an interrupted galvanic current of twenty cells produces, within forty-eight hours, a flaccidity of the mass, a general improvement in symptoms, and a sudden arrest of the progressive signs of pregnancy, this probability becomes as much a certainty as diagnosis often is in cases of disease attended by some obscurity."

Dr. Joseph Price, at the recent meeting of the American Association of Obstetricians and Gynecologists, said the symptoms are:

"First, partial or complete cessation of menstruation for one or more periods, generally accompanied by other rational symptoms of pregnancy, though occasionally these are all wanting.

"Second, pain which is peculiar, being generally severe, paroxysmal and long continued. . . . These pains are apt to subside for a time only to recur.

"Third, the appearance of uterine hæmorrhage, which is again peculiar in that it is usually irregular, both as to time and quantity, ... and containing shreds of tissue which are portions of the decidua vera."

Greig Smith closely concurs with the views just expressed, and John Strahan, M.D., to whom has just been awarded the Jenks prize for an essay on the subject of extra-uterine pregnancy, says: "A rounded, elastic, semi-fluctuant, tender tumor behind and to one side of a slightly enlarged and laterally displaced uterus, if found to be rapidly increasing under circumstances which permit the possibility of extra-uterine pregnancy, could hardly be mistaken for anything else. . . . If in a week or two the extra-uterine swelling had increased considerably, and shreds of decidual membrane had come away with the metrorrhagia, the case for tubal gestation would be all but complete. . . . If we happened to have most of the symptoms of even early pregnancy present, and a vascular, growing, semi-fluctuating tumor at the back or side of an enlarged uterus, with suspension of the menses for a time or two, and then irregular hæmorrhages, with severe crampy pain, the diagnosis would be evident to the simplest."

Having thus called to mind the important data of an early period of ectopic gestation, allow me to place my case in comparison therewith, that you may be able to compare the grounds upon which my diagnosis was based.

The case which I submit as a text for discussion came under my care in January last, with history as follows: Mrs. W. has borne three children, the last two and a half years ago, since which time menstruation has been normal until recently, and she has been in good health. She menstruated in September, and the period which should have commenced October 18 was missed altogether. The patient noticed abnormal desires for food which led her to suspect pregnancy. October 30 she had a slight discharge of mucus tinged with blood, which continued at intervals till November 15, the amount and character varying; when the flow was slight it was dark and offensive. For about two weeks she grew better and attended to her household duties, but Nov. 29, without obvious cause, she was seized with intense pain in the lower part of the abdomen, which compelled her to remain unmoved in a semi-flexed position till carried to her bed. She vomited violently; she had intermittent pain (supposed to be uterine), with a free flow of blood. The phenomena of shock were so marked that for twelve hours death seemed imminent. Her physician, Archibald Crary, M.D., of Hartford, W. Va., wrote that, although an abortion was expected, the os uteri was not dilated. Her highest temperature was 99°. In four days she was much improved in all respects, and the flow of blood had ceased. December 13 she discharged what she says her physicians called fœtal membranes, since which time she has lost no blood.

December 20 she had a second attack of violent pain, not so severe or protracted as the first, with no flow of blood. Since the beginning of her trouble she has been subject to brief severe pains in the left iliac region, produced by any exertion.

Her physician wrote to me that he suspected extra-uterine pregnancy. I saw her first January 3, 1889. She was spare, seemed mentally and physically depressed, thought she had lost some flesh, though she was positive the upper part of the abdomen was growing larger. She had no mammary signs of pregnancy, though perversion of appetite continued. Abdomen tender to touch, pain increased by deep pressure, no tumor detected by palpation, auscultation negative; by vaginal examination uterus deflected to left, os patulous, apparently not much enlarged, but since introduction of sound caused great complaint of pain, the cavity was not well explored. To the right of uterus and apparently loosely connected with it was a firm, irregularly oval mass, the size of the folded hand; the mass was slightly movable and not very tender. From the

history given me this tumor had grown during the past few weeks; complained of feeling of pressure on rectum.

During the ensuing two weeks the continuous current was applied six times by means of ball electrode in vagina, and twice with sponge on surface of abdomen. But, since vesication occurred, a large wire gauze was substituted. From eight to twenty cells of Waite & Bartlett's battery were used, and, under anæsthesia, the current was carried to 125 milliampères. A very remarkable effect mentioned by the patient was that from the commencement of her sickness her extremities had constantly been cold and clammy, but from the first application of the battery they had grown warm.

She left the city January 19, at which time her general health was much improved and her normal appetite had returned.

February 25. The tumor has decreased, is not painful. Uterus somewhat retroverted.

April 11. She has gained in weight, has no pain, menstruation is as well as before her trouble began.

Mr. President, having thus placed before you the facts, I am not inclined to weary you with deductions. You are well aware of the diversity of opinion that exists as to the relative value of electricity and laparotomy in the early treatment of ectopic gestation. Granting the correctness of the diagnosis, I feel warranted in claiming success by the former treatment in my case.

TOPICAL TREATMENT OF DIPHTHERIA AND CHEMICAL SOLUTION OF THE MEMBRANE.—SUBSULPHATE OF IRON AND SALICYLIC ACID.

BY A. W. NELSON, M.D.,
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The *New York Medical Journal*, January, 1874, published "Forty Cases of Diphtheria Treated by Local Application of Sulphate of Iron." The present writer in that paper says: "About 1865 I became confident that some local treatment would best cure the disease, and often wondered what chemical re-agent would destroy and counteract the source of fever, the putrid mucus, pseudo-membrane, continuously exuding, and at the same time not cauterize and irritate the still living, although infiltrated, membrane of the throat. . . . . Creosote suggested itself to be considered (this was just before the carbolic acid discovery or invention), but it was not tested. Another agent, the subsulphate of iron, Monsel's styptic, in some now forgotten way was brought to notice. My first application to the throat in diphtheria determined with me its efficiency, etc. . . . "You will sometimes induce a little vomiting at first, an effect not injurious—on the contrary, possibly beneficial in ridding the stomach of poisonous mucus swallowed before, etc."

The tincture of chloride of iron has usually been given, 3 to 10 drops in a *little* water, with the local application of the subsulphate, and this line of general treatment has undoubtedly largely prevailed, in this country at least. Dr. Whittaker, Cincinnati, 1881, gives nineteen cases treated in the same manner, with circumstantial detail. THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Nov. 30, 1889, commends the local treatment editorially, and in the treatise, "Diphtheria and Intubation," by Drs. Billington and Dwyer, 1889, the first topical application named is Monsel's styptic.

Prudden, in his exhaustive paper, "Etiology of Diphtheria," (*American Journal of Med. Sciences*, May, 1889,) advises local applications without indication of the agent. In the same number D'Espine (*Rev. Méd. de la Suisse Romande*, No. 1, 1889) advises irrigation with a dilution of salicylic acid, 1 or 2 in 1,000, or in infants, 1 in 1,000 or 1,500. Several mixtures have been used, as also pepsin and tripsin, to effect solution, sometimes with good results, according to reported cases.

In a large number of diphtheritic throats with enlarged glands of the neck, there is much necrosis of the membrane and fetor, and little doubt of the nature and specific origin of the disease. The best men may sometimes be deceived in the milder cases. The subsulphate application, however, is very effectual in both the severe and mild forms.

Not as frequently we observe a different condition—a diphtheritic membrane firmly attached in the fauces, whitish and blueish, not necrosed, without fetor, gradually spreading from tonsil to velum and uvula and palatal arch, and behind and beyond sight in the post nares. The living internal structures sometimes are slightly swollen; the lymphatics of the neck, as I have observed, considerably swollen. Great weakness and apprehension accompany this condition, and the usual remedies have little effect.

There can be no doubt here as to the specific nature and origin; nor can there be much doubt that it is the same in specific nature as the pseudo-membrane of croup. Here the two diseases meet and become identical, except in location.

About a year since my attention was attracted to the use of salicylic acid in solutions and ointments for corns of the feet. I tested the pure acid several times, especially in the troublesome soft corns between the toes. The part was moistened once a day and the acid rubbed in for a few days. The hypertrophied tissues would grow smaller and disappear, and sometimes the epidermis near would desquamate, but without sore-

ness of the underlying derma. The effect was quite perfect.

Case 1.—April last I had a case of diphtheria, and it occurred to me to apply the acid pure. It was applied hourly to the patch on the tonsil, where it *stuck* from hour to hour, enveloped in the moisture of the parts, but gradually thinning the deposit and limiting its extent. It was the child of very poor parents, and after three days the mother reported such improvement that it was not again seen. The child recovered soon.

Case 2.—June 4. L. J., girl, æt. 8; well-marked membrane over one tonsil, with slight necrosis of deposit only; enlargement of lymphatics of neck; some fever; no appetite. Powder of salicylic acid hourly, and ℞ tinct. ferri chloridi ʒiv, hydrarg. bichloridi, gr. ij, ♏; gtt. iij in a teaspoonful of water every hour or two; acid every two hours at night. Continued nine days, with occasional intermissions of some hours, when the membrane would again appear, again to melt under the acid. No extension of the membrane while the acid was used. No complaint of the peppery stinging of the remedy. Towards the last, after disappearance of membrane, used also, ℞ bismuthi subnitratis ℥ss, olei minthæ piperis, ♏ vj, ♏. Make a fine powder. Dust the throat every hour or two.

For a little space beyond the part affected by the membrane the salicylic acid whitens the mucous surface, but without inconvenience and without any invasion of the disease. The surface soon again recovers. The little patient was seen daily twice from June 4th to 11th, and to 13th once daily, and last on the 15th. No sequences.

Case 3.—Sept. 4. Mrs. H., æt. 33; considerable fever; enlarged glands of neck; weak; patch on one tonsil and near it.

℞. Tinct. ferri chloridi ʒiv and hydrarg. bichloridi, gr. ij, ♏, gtt. iv in aqua ʒj hourly or two-hourly. Acid applied every hour or two; sometimes not so often. Complains of its stinging; membrane constantly recurs upon omission of acid. Finally applies remedy hourly with regularity, when the throat is no longer painful and the acid does not sting, and the deposit thins and disappears.

Mrs. H., a woman of intelligence, did not at first like the remedy, but seeing its benefit in the appearance and the lessened sensitiveness of the affected parts she became enthusiastic and thoroughly coöperated. She was visited twice daily for about nine days till Sept. 12th, when the tendency of the membrane to recur ceased. The bismuth mixture was then used with comfort.

A solvent of the membrane without irritation of the living structures *seems* to be found in the salicylic acid—much better than the subsulphate, whenever the membrane does not necrose and break down. The subsulphate hardens, in that way killing the acting membrane, rather than acting by solution. Creosote might act well but for its tendency to extend deeply.

The question of destructive action upon bacteria has not been discussed. It can in these instances be affirmed without discussion, and the treatment is considered from a different standpoint.

Hourly use of the acid, which is a very light powder, does not affect the youngest patient unfavorably by the amount swallowed or absorbed.

FACT *VS.* FICTION TOUCHING YELLOW FEVER INOCULATION, WITH A RECORD OF RESULTS WELL AUTHENTICATED.

BY J. McF. GASTON, M.D.,
FORMERLY A RESIDENT OF BRAZIL.

The discussion of the claims of inoculation with the attenuated virus of yellow fever for the prevention of this disease or the mitigation of the access, should it be developed, resolves itself now into a consideration of facts. No further argument in regard to the principle upon which inoculation is based seems requisite for the proper understanding of the data which have accumulated illustrating its results. The only question likely to be made is respecting the correctness of the statistics and the trustworthiness of the reporter. But observing the rules which ordinarily determine the value of evidence it will be seen that quite a number of witnesses corroborate the statements of the original experiments. If the observations made and recorded by different individuals at different times and different localities, coincide in the points which substantiate the efficacy of yellow fever inoculation, no reasoning as to the theory of propagation, can invalidate the conclusions. True science deals with facts and not with theories, so that we must accept the evidence of those who report facts unless the credibility of the witnesses is impeached.

As no interested motives can be attributed to the many Brazilian physicians who have recently investigated the process of inoculation introduced by Dr. Domingos Freire in Brazil, I will present the testimony as published in the Brazilian newspapers.

A fitting introduction to the report of observations from the city of Campinas, in the province of S. Paulo, is afforded by a letter addressed to the editor of the *Gazeta de Noticias*, of Rio de Janeiro, on May the 12th, 1889, of which the following is a literal translation:

"I ask of you the kindness to insert in your valuable paper the accompanying letter from my distinguished colleague, Dr. Angelo Simões; who has labored so diligently in Campinas for the active propagation of inoculation against the yellow fever.

"By this letter it will be seen the same favorable results obtained here in the capital, as also in Nictheroy, Santos, Vassouras and Desengano, are being splendidly verified in the ill-fated Campinas; and I only regret that this was not done earlier for security against such evils and misfortunes. In due time I will publish the general statistics which place in evidence all the facts which militate in favor of the prophylactic measure, that from 1883 in four epidemics have clearly shown its value. In the meantime, while I recognize the support given by the press, a great part of the population and my colleagues; the ill-will of some, the ignorance and indifference of others have been obstacles to its general adoption, as is requisite for a complete effect of a preventative recourse which experience has fully sanctioned.—Dr. Domingos Freire."

Following is the letter referred to above:

"CAMPINAS, May 7th, 1889.

"I received your letter of the 2nd inst. and with it the culture liquid. I have vaccinated up to date 630 persons and I think none remain to be vaccinated. I have gone through almost all the streets and meet only either those already vaccinated or individuals who have been attacked. One or another has refused to be vaccinated, but almost all have accepted it. I have proceeded with the greatest caution; I do not vaccinate those who have had the disease, nor those in the incubatory stage. I think, then, that the portion of the population not attacked by the disease have been vaccinated; and the new cases which are few, that are appearing in individuals who do not wish to avail themselves of this prophylactic, without counting one or another vaccinated, who has had the disease mildly.

"When the epidemic is ended I will prepare the statistics here for publication, for which I ask permission, presenting succinctly passing events without omitting anything.

"Withall I do not expect my labor to end with this. I intend to vaccinate, perhaps on a grand scale, those who return to the city with a view to protect them from the disease during the next year.—Dr. A. Simões."

It is proper to state that my home in Brazil for a number of years was at the city of Campinas, and hence the facts connected with this outbreak of yellow fever among the people of this place, and the result of the use of inoculation for the arrest of the epidemic have a peculiar interest.

I have to assure my colleagues that what is herewith presented for their consideration is worthy of credit.

I cannot render a better service to the true history of inoculation than to present a few of the many notices which are recorded in the files of the newspapers of Campinas which are in my possession. These are sent by friends living in that section who have taken no part in the discussion of the merits of inoculation as a preventative of yellow fever.

The *Correio de Campinas* of April 25th, 1889, contains the following statement:

"VACCINATION AGAINST THE YELLOW FEVER.—The distinguished physician Dr. Domingos Freire vaccinated yesterday in the Misericordia Hospital 34 persons, who went there to secure immunity from the terrible epidemic.

"Besides this many persons were vaccinated in their own houses.

"Dr. Domingo Friere was assisted by the noted practitioner, Dr. Angelo Simões, who continues to aid the great scientific investigator.

"We continue to recommend to the people a resort to vaccination as the only preventative against the yellow fever.

"If all would avail themselves of that sure prophylactic, Campinas would be free from this great scourge in a few days."

We extract from another issue, May 1st, 1889:

"Vaccination against yellow fever continues to be well received by the people.

"Yesterday, Dr. Angelo Simões, assisted by the pharmaceutist Soares da Camara, vaccinated 62 persons, completing the number of 510 who have been vaccinated.

"Up to the present time there is no notice of any of the persons vaccinated being attacked by the epidemic."

It is unnecessary to multiply this list of publications, but there are two points of importance which may be noted in the statements made:

"All the persons who have resorted to that preventative measure are in excellent condition, not one of them having been attacked by the epidemic.

"It is notable that on the day following the vaccination almost all the subjects perceive symptoms of fever, more or less marked; this fever, however, disappears without the use of any medicine."

I may state that among the names of those vaccinated, many of my former acquaintances are recognized, who would be incapable of practicing any deception in this matter.

Those of my colleagues in this country who have known anything of my antecedents will not attribute to me a purpose to mislead them in regard to the facts developed by the large number of vaccinated having escaped unhurt, while others were dying around them. The great publicity given to the vaccination in the large hospitals and churches, with the records of the names and dates, affords an additional assurance of the trustworthiness of the statistics. It is not any longer requisite to send a commission to study this process from a scientific standpoint, but we have simply to accept or reject the testimony.

The result in the city of Campinas, in the

province of S. Paulo, is shown by a telegram on May 3rd, 1889, as follows:

"Dr. Angelo Simões, aided by the pharmaceutist Camara, has vaccinated more than six hundred persons by the process of Dr. Freire, having obtained excellent results. The epidemic is declining rapidly. The population is satisfied with the result of the vaccination."

This is taken from the *Gazeta de Noticias*, of Rio de Janeiro, and another telegram is published in the same paper from Campinas, May 11th, as follows:

"Of the seven hundred vaccinated up to the present time only two have died of the yellow fever, yielding therefore an excellent result of this prophylactic measure."

For the information of the profession as to the effects of inoculation upon the subjects, the following report is translated from a newspaper of Rio de Janeiro, *O Paiz*. It is by Dr. Urias A. da Silveira, author of "Brazilian Therapeutics," dated at Barra Mansa, August 29th, 1889, and addressed to Dr. Domingos Freire.

"Considering of utility, the two cases of vaccination against yellow fever done by you upon two persons of my family in your office at 68 Rosario street, as statistical elements, I come spontaneously to bring them to your attention.

"I present faithfully the facts as observed by me:

"*Case 1.*—D. M., 36 years old, sanguine, nervous temperament, enjoying perfect health, vaccinated 3:30 P.M., July 25th, 1889. General condition: At 6 P. M., hot flushes; at 8 P. M., the temperature in axilla 37.7 cent.; at midnight 38.1 cent.; at 6 A. M. on 26th, general sweat without any medication and reduction of temperature to normal.

"Pains of the limbs, especially the lower extremities, frontal headache, vertigo, congestion of conjunctiva with running from eyes, slight yellow tint of conjunctiva perceptible to all. This followed by discomfort for twenty-four hours and tendency to drowsiness.

"Diminished appetite, urine scanty and high-colored, of which a sample is presented.

"At the outer and upper third of the left arm, where the injection of 1 gram of the culture liquid of the attenuated micrococco xanthogenico was made, there was observed six hours afterwards a red spot, of a congestive nature and slightly swollen, painful to the touch and pain increased by any movement. This spot continued for thirty hours, becoming then paler, less painful and less swollen. It gave place subsequently to a greenish-yellow discoloration, which disappeared after the seventh day.

"*Case 2.*—N. N., 14 years old, nervous lymphatic temperament and in perfect health.

"The same local and general phenomena described above were observed with little modification, but more marked and accompanied with nausea and abundant flow of saliva. In both the signs of general disturbance preceded those of the localized lesion on the arms. The reunion of these signs in harmony and their development, demonstrates the results of abortive cases of yellow fever or that the symptoms correspond to it.

"Having these two facts of great significance, based on what I have learned from your elaborate work upon the vigorous method employed in the culture of the germs of yellow fever, and the attenuation of their violence, with due regard to what all bacteriologists practice, I am convinced that to you belongs the palm of victory for the discovery of the immediate cause of yellow fever and of the means of preventing it, with like benefit as the cow-pox in variola.

"A vaccination by the attenuated virus of yellow fever by the process of Freire is, in my humble opinion, the most efficacious hygienic measure of the present day, as it is the greatest factor employed for the extinction of yellow fever, already endemic in Brazil. Without it, fruitless and useless will be whatever means are employed to protect large cities. They may have the merit of diminishing their epidemic explosions but not to extinguish them entirely, as will occur if both should be employed together.

"Allow me, in conclusion, to express with frankness my opinion upon your process. It is that the vaccination of Freire is beginning to enter upon the scale of consummated facts, as one of the grand conquests of science over the greatest scourge of humanity.—Dr. Urias A. da Silveira."

In connection with these data relative to yellow fever inoculation from various sources, calculated to impress the medical profession with its efficacy, I will give a translation of the statistical report of the results in different portions of Brazil from 1883 to 1889, recently published by Dr. Domingos Freire. While there have been announcements in the medical journals and in the newspapers of the United States, to the effect that Dr. George M. Sternberg has investigated this matter and pronounced an unfavorable decision in regard to the process of inoculation adopted by Dr. Freire and the results obtained by it, this matter is now submitted to the thinking man as a reality.

"Statistics of preventive inoculation against the yellow fever.

"The epidemic of yellow fever which was developed in Rio de Janeiro during 1888–89, and was propagated to various places in the interior of Brazil, serves to demonstrate for the fourth time the prophylactic value of vaccinations by means of the attenuated microbe of this disease.

"It was between the months of December and March that the epidemic attained its greatest intensity; in the month of May of 1888 the first sporadic cases appeared, and the last in June, 1889. We inoculated in this period 3,520 per-

sons, of whom 988 were strangers and 2,532 Brazilians. Distributed thus: Rio de Janeiro, 2,138; Campinas, 651; Vassouras, 199; Nitheroy, 163; Santos, 133; Desengano, 102; Serraria, 80; Rezende, 54. The disease prevailed with great intensity at all these points.

"Among the 2,532 Brazilians are found 1,680 that correspond very much to the 998 strangers, because in this number are embraced not only individuals coming from the interior and residents of this city for less than six years, but likewise children are included, which are proven to have a susceptibility similar to strangers themselves.

"The percentage of mortality was 0.79 among those who were vaccinated. In Santos, Rezende and Serraria the immunity of the vaccinated was complete. The percentage of each locality was the following: Rio, 0.98; Campinas, 0.46; Vassouras, 0.5; Nitheroy, 0.75; Santos, 0; Deseugano, 1.9; Serraria, 0; Rezende, 0."

Let us see now the mortality from yellow fever among those not vaccinated. It was 4,115, distributed as follows:

"Rio, 2,407 (including the sick of the Maritime Hospital of Santa Isabel); Campinas, 812; Vassouras, 15; Nitheroy, 177; Santos, 650; Desengano, 22; Serraria, 21; and Rezende, 11.

"Of the 4,115 there are about 2,800 strangers who died, being 1,176 in this city (Rio de Janeiro); 750 in the Maritime Hospital; 63 in Nitheroy; 500 more or less in Santos; 300 more or less in Campinas; 7 in Desengano; 3 in Rezende; 3 in Vassouras.

"The deaths of Brazilians make up one-fourth, who for the most part have not been habituated to the virus, being in localities where the scourge has never before broken out.

"With a view to illustrate the efficacy of the inoculations, let us record the ratio adopted by Dr. Jemble in Senegal. He verified that among the strangers residing there from one to three years, 75 out of 100 are attacked with yellow fever and 66.6 out of 100 die of it. Let us make application of these proportions to our vaccinated strangers or natives, that resided in the infected district from a few days to three years.

"There were inoculated in Rio de Janeiro 1,183 persons under the conditions mentioned, and of these, the deaths should have been at least 591. Behold! only 18 died; so that 573 lives were spared. In Campinas, a city never visited previously by yellow fever, the whole of the 651 vaccinated may be considered as newcomers. Among these the deaths should have been 325, whereas there were only 3, and these were Brazilians, with complete immunity of 152 strangers.

"Likewise in Vassouras there should have died 5, while there was only one victim. In Nitheroy there should have been 5 deaths among the 11 strangers under the above conditions, yet there was but one fatal case among those vaccinated. In Santos, in the list of 57 individuals under the same conditions, 28 should have succumbed, yet there was not a single case of death amongst our inoculated persons in this city. In Desengano the two unfavorable results were of strangers who had resided there six and eight years. In view of the fact that the disease prevailed in that place for the first time, all of the 102 inoculated may be reckoned as susceptible in like manner as recently imported strangers. It might have been expected that at least 51 should have perished.

"In Serraria, making a similar calculation, 39 should have died, whereas the immunity was absolute. In Rezende the 54 inoculated should have furnished 27 fatal cases, as the disease had not appeared there previously, while in this city there was complete immunity.

"GENERAL SUMMARY.

"From 1883 to 1889 we inoculated 10,474 persons with a mortality of 0.4 per hundred. From 1883 to 1884, 418 inoculations; from 1884 to 1885, 3,057 inoculations; from 1885 to 1886, 3,473 inoculations; from 1888 to 1889, 3,532 inoculations. Total, 10,474 inoculations.

"The inoculations were interrupted during 1887 on account of my visit to Europe and the United States, where I went to present the result of my efforts, which happily were well received.

"It is proper to note that with a view to avoid the criticisms of the ill-disposed, I have authenticated the results obtained this year; and I have the documents relating to the inoculations, all signed by eminent physicians, many of them sanitary authorities, by the members of municipal councils, by police officers and by many other distinguished and trustworthy persons. Would that this could have so happy an exit in the minds of those who are charged with the most precious of all interests—the health and the life of the people.—Dr. Domingos Freire.

"Rio, October 2, 1889."

With much labor and painstaking, these data have been collected and recorded, without any other object than the vindication of truth by facts. I am convinced that influences have been brought to bear upon the public mind in this country, which have prevented an impartial judgment in regard to the merits of this process of inoculation as a prophylactic against yellow fever. But with the report of such varied observations and statistics as are here presented, I am convinced that the members of the medical profession will not any longer shut their eyes to the overwhelming weight of testimony in favor of the protection afforded by this measure.

If our sanitary authorities will take steps to test yellow fever inoculation as it has been done in Brazil, all controversy will be ended by the realization of its protective agency in the arrest of yellow fever in our Southern cities.

MEDICAL PROGRESS.

ACTINOMYCOSIS. — O. BUJWID reports seven cases of actinomycosis observed by him in three years. The first two cases occurred in a young printer and his betrothed. The abscesses which had formed were incised, cleansed and dressed antiseptically. Up to the present time, eighteen months after the operation, there has been no return of the disease. The third case occurred in a chimney sweeper. In this case also the abscesses were opened and scraped out, but from time to time the disease recurred. In the last year the writer has observed three other cases similar to the ones already described, and one case of cutaneous actinomycosis of unknown origin occurring in a chimney sweeper. In the writer's opinion the treatment should be of a radical character, though the prognosis, even in cases where there is abscess formation with mixed infection, is not unfavorable.— *Wiener Med. Woch.*

O'DWYER'S INTUBATION OF THE LARYNX.— GUYER reports (*Cent. für Klin. Med.*) the results of intubation of the larynx, as performed in the Children's Hospital of Zurich. Up to the end of May, 1889, the operation had been performed on account of acute laryngeal stenosis in twenty-seven cases. Of these thirteen recovered, of which two were infants, aged 8 and 13 months respectively; the remainder varied in age from 2 to 8 years. In all these cases the diphtheritic character of the stenosis was proved by the affection of the larynx and by the membrane coughed up. In all the cases the stenosis was so severe that there was only a question of choice between tracheotomy and intubation. In the fourteen cases which died the cause of death in eleven cases was extensive bronchial diphtheria; in two, pneumonia; in one, nephritis. In most of the cases the children were able to dispense with the tube after five or six days. In four cases in which removal of the canula gave rise to bad symptoms its replacement was followed by excellent results. The reporter believes that intubation will not supplant tracheotomy, but merely limit its applicability.

TREATMENT OF DIABETES.—DR. ROBIN has made some interesting observations of patients suffering from diabetes, in which he carefully examined the chemical composition of the urine and studied the influence of various substances upon it. He reaches these conclusions: Biological chemistry shows that in diabetic patients there is not only an exaltation of the various processes of nutrition, but also an increased functional activity of special organs, chiefly the liver and the nervous system. In consequence, this undeniable increase in the functional activity of the general nutrition and of the hepatic cells, brought about by a direct or reflex nervous irritation, must be made the point of departure for the therapeusis of diabetes. *A priori* one may be sure that any remediable measure which in any wise retards the general changes, or those of the nervous system, will certainly lessen the glycosuria. Still, there is a prospect of success with a remedy only when it exercises its restraining influence upon the general changes by means of its primary influence upon the nervous system, and when it does not act too powerfully upon the functions of this system. The therapeutical remedies which impair nutrition must be banished, for it has been clinically as well as experimentally proven that they do not yield useful results.

The therapeutical indications in diabetes are as follows:

1. One must remove from the organism, by means of suitable diet, the materials that form sugar, and deprive the liver cells of the substance that gives rise to their functional irritation.

2. One must restrict the excretion of assimilated materials and the formation of glycogen by means of therapeutical remedies which check the chemical processes of organic life by means of their primary action upon the nervous system.— *Inter. Klin. Rundschau.*

CREOLIN IN GYNECOLOGY.—Extensive experiments have been made by CHÉRON (*Annals of Gynecology*) with creolin in 2 and 5 per cent. solutions. The weaker solution was used for vesical injections in cases of gonorrhœa. Neither poisoning nor pain resulted; the discharge from the urethra diminished and soon disappeared, injections being made every other day. Gonorrhœal vaginitis was quickly improved by irrigation of the vagina and vulva with the 5 per cent. solution. In purulent cervical endometritis the diseased tissues were first carefully cleansed with absorbent cotton, after which an application of the 5 per cent. solution was made. After a few applications the suppuration ceased. Creolin gauze was found to be an excellent substitute for iodoform gauze in cases of suppurative and hemorrhagic endometritis in which a tampon was required. From the foregoing it was concluded that creolin has a very positive effect upon the microbes of gonorrhœa and of pus, and that in ordinary doses it is neither painful nor toxic.

ALCOHOL IN PUERPERAL FEVER. — DR. A. MARTIN, of Berlin, reports (*Internat. Klin. Rundschau*) his experience with alcohol in the treatment of eighteen cases of puerperal fever. Of these eighteen patients, all of whom were very ill, some of them, indeed, moribund when the treatment was begun, five died, three of them only from the infection. The amount of alcohol administered was enormous; thus, one of the pa-

tients took in six weeks seventeen bottles of cognac, thirteen bottles of Burgundy, 37 half bottles of champagne, four and a half bottles of other heavy wines and six bottles of porter. At no time was there any alcoholic intoxication observable. In some cases, in connection with the alcohol other measures were employed, such as the removal of the decomposed decidua, irrigation and permanent drainage. In the treatment of the fever the usual antipyretics must be given, as this is not influenced by the alcohol. In this regard Martin does not agree with Breisky and Conrad that the action of alcohol is that of an antipyretic; but, on the contrary, he seeks to obtain by it an increased heart's action and an increase in the patient's power of resistance against the infection. Martin recommends a closer observation of this method of cure, which should not, however, be overestimated.

DIETETIC TREATMENT OF CHRONIC BRIGHT'S DISEASE.—In a series of experiments under varying conditions upon healthy persons and those afflicted with diseases of the kidneys, DR. J. SCHREIBER endeavors to solve the problem whether patients with chronic nephritis should be nourished with food rich or poor in albumen. This question, as is known, has been answered by Senator and by Semmola in the latter sense. According to the reporter's experiments, it appears as though the opinion of Senator and others, that food rich in albumen exerts an injurious effect upon cases where there is no albumen present, is incorrect. The ingestion of large quantities of raw eggs with food rich in nitrogen does not lead to albuminuria in healthy individuals, or in those disposed toward albuminuria. A mixed diet rich in nitrogenous elements, with coagulated or fluid albumen added to it, does not lead to increased excretion of albumen in the urine of diabetic patients; indeed, it often diminishes it.

The reporter offers two observations from Leyden's Clinic to prove that the milk diet insisted upon by Semmola does not influence the absolute quantity of albumen in the urine. The reporter concludes that inasmuch as Bright's disease is one of the affections that lead to gradual and generally progressive exhaustion of the forces, the diet should be of a most comprehensive character; the forms of diet should be altered to meet the exigencies of each case.—*Inter. Klin. Rundschau.*

GLYCERINE ENEMATA.—In order to discover the laxative action of glycerine, C. LÜDERITZ has experimented upon rabbits, in which the effects produced by the enemata were observed through the opened abdomen. After the injection of a moderate quantity of glycerine, a little transparent fluid soon appeared in the rectum around the fæces, and gradually became apparent throughout an extent of 15 cm. from the anus. At the same time the mucous membrane became more injected, and energetic movements were seen in it, which had the effect of forcing downward the contents of the intestine. These movements were only manifested in the presence of the fluid referred to. In some cases the intestinal movements were not powerful enough to overcome the action of the sphincter, and no evacuations occurred; in the other cases evacuations took place without visible intestinal movements. The action of the glycerine, therefore, is a local one, confined to the portion reached by the glycerine. The reporter is of the opinion that the action of the glycerine in man is explained in the same manner.—*Centralbl. f. Klin. Med.*

BUTYLCHLORAL IN TRIFACIAL NEURALGIA.—Butylchloral appears to possess, besides its diaphonectic action, a certain specific influence upon the trigeminal nerve, which can be anæsthetized throughout its entire course by an internal dose of from 1.0 to 3.0 grm. of this agent. Prof. LIEBREICH (Berlin) gives the following formula for neuralgia of the trigeminus.

℞ Butylchloral. . . . . 3.0–5.0 grm.
Alcoholis rectificat. . . . . 10.0 grm.
Glycerinæ . . . . . 20.0 grm.
Aq. dist. . . . . 120.0 grm.
S. Two to four tablespoonfuls at a dose.

—*St. Petersburger Med. Woch.*

IMPORTANT IN FUMIGATION.—DR. SQUIBB, of Brooklyn (*Medical News*), in a recent address on sulphur fumigation in the prevention of infectious disease, directed attention to the important fact that, in the absence of moisture, the penetrating power of sulphuric acid gas is only slight, and for this reason there should be an abundance of aqueous vapor in the apartment in which the sulphur is burnt. Boards of Health neglect to emphasize this fact, which is not known to the laity. The *Medical News* recommends that water be kept boiling in the room in which gas is being generated. Dr. Squibb also called attention to the relative uselessness of chlorine gas as a disinfectant in the absence of aqueous vapor.—*The Pacific Record.*

INFLAMMATION OF THE LUNGS AS THE RESULT OF THE DECOMPOSITION OF CHLOROFORM BY GASLIGHT.—ZWEIFEL observed in a series of laparotomies which he was obliged to make by gaslight in a badly ventilated room, that the patients exhibited, during and after the operation, symptoms of severe bronchial irritation, leading in some instances to bronchitis and catarrhal pneumonia, whereby the dangers of the operation were greatly enhanced. He attributed these results to the decomposition products of the chloroform vapor produced by the gaslight. He was, therefore, led to substitute ether for chloroform when operating by artificial light, and with the most gratifying results.—*Cent. für Klin. Med.*

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SATURDAY, MARCH 22, 1890.

THE NATURE OF TETANUS.

For a great many years the epidemic and contagious nature of tetanus has been asserted by various medical and surgical writers, and their observations in the light of recent experiment is interesting. LARRY, THIERRY and HUTIN recorded many outbreaks of this terrible disease after the Napoleonic battles, and MURAT in a thesis published in 1816 reports an epidemic of tetanus following the battle of Jena, to which the wounded who had sought shelter in the churches and churchyards (localities in Europe serving as burying-places), it may be recalled, were especially liable. In 1854 SIMSON, and 1855 BENJAMIN TRAVERS, of Edinburg, asserted that tetanus was infectious; a statement affirmed by VULPIAN in 1866, and reaffirmed by TRELAT after his experience in the Franco-Prussian war of 1870–71.

Acting upon the similarity of tetanus and hydrophobia and following the example of PASTEUR, NOCART, in 1882 tried in vain to inoculate the the disease with cerebro-spinal fluid and emulsions of the medulla obtained from tetanized animals. This was later accomplished by SHAKESPEARE, of Philadelphia. The same year, 1882, BROWER and CURTIS pointed out the existence of bacteria in the blood in this disease. In 1884 tetanus was first experimentally transmitted to rabbits by inoculation, and at the same time NICOLAIER, of Göttingen, found that animals inoculated with soil taken from the roads developed symptoms comparable to those of tetanus in man and determined the constant presence of a bacillus but never succeeded in isolating and cultivating this microörganism. He attributed the symptoms to a ptomaine generated by the organism he had described and which now is known as the bacillus of NICOLAIER. His finding was confirmed later by HOCHSINGER, OHLMUELLER, GOLDSCHMIDT, BEUMER, LAMPIASE, NOCARD, SHAKESPEARE and others, and BRIEGER in 1887 communicated to the Berlin Medical Society the method by which he had isolated a crystalizable toxic ptomaine which he named *tetanine*, and which would invariably cause tetanus in animals inoculated therewith.

The difficulty has been to isolate the bacillus of NICOLAIER and experiment with pure cultures. Until this was done the position of this investigator remained only a working hypothesis. KITASATO, of Tokio, Japan, finally accomplished this result. His experiments were reported in April, 1889, before the Congress of German Surgeons at Berlin. He found these bacilli able to withstand a temperature of 80° C. which effectually destroys the adventitious organisms and left a pure culture. They are extremely hardy and refractory to influences quickly destructive of most bacteria, requiring an exposure of five minutes to 100° C. of heat and of ten minutes to a five per cent. solution of phenic acid to absolutely prevent their growth. They also endure very low temperatures, an interesting and important point when the great rôle attributed to cold and wet by the older writers is recalled. He also reported that they could be best cultivated in acid media in an atmosphere of oxygen. By this process WEYL, of Berlin (*Sem. Méd.*, 90), has managed to transmit tetanus even to dogs, which hitherto have been considered refractory to this disease, and by successive cultures and inoculations with lower animals has scientifically demonstrated the specificity of the bacillus in question.

The elective action of the virus upon the medulla has been pointed out even in very early descriptions of the disease and is shadowed forth in the popular names of the malady. A number of writers have considered the morbid process to be an inflammatory condition in that portion of the cerebro-spinal apparatus and very rarely have recorded anatomical changes in this region found post-mortem. It is interesting to know that inoculations with preparations of the medulla

are more certain than with other portions of the central nervous system, and it may be permitted to expect that a manner of attenuating the virus and even of securing protection against the disease is within the accomplishments of the immediate future.

Added to the experimental foundation for a belief in the microbic origin of tetanus are the clinical features of the disease, which have been much amplified by VERNEUIL, whose name has long been associated with special studies of this malady. He has recently presented before the Academie de Médecine of Paris a carefully prepared brochure on its origin, giving very numerous verified instances of its epidemic and infectious influence, and its mediate and immediate contagiousness. Of all lower animals the horse is most subject to tetanus, to which fact he gives much importance, and directly or indirectly traces infection to an equine source, very frequently through contamination with an infected soil, a point borne out by the experiments of Nicolaier, already mentioned. The earth may be contaminated in various ways, by the excreta of tetanized animals or by their bodies, and this, in his view, accounts for the preponderance, in traumatic tetanus, of wounds of the lower extremities and of wounds made by objects that have been in contact with the earth. From extensive statistics he notes the interesting fact that cavalrymen are twice as subject to tetanus as artillerymen, and four times as compared with infantry, and alludes to the corresponding geographical distribution of the equine and human form. From a mass of data he feels justified in describing the origin of tetanus as equino-telluric, and after asserting the transmissibility of the disease by instruments and the hands of the surgeon he urges the necessity for public hygienic control of the malady in man and the lower animals.

Altogether the etiology of tetanus may be considered as reasonably well settled, and the necessity for preventing the spread of infection and destroying sources of contagion demands precautions which readily suggest themselves. It is to be hoped that treatment of the disease will benefit by our added knowledge of its real nature; and it may be apropos to mention three cases of tetanus which recovered under hypodermic injections of phenic acid, reported by Professor BACCELLI, of Rome (*Sem. Méd.*, 90). He employed a centigramme of the acid every two hours, and advises double this quantity, if necessary. In view of the fact that the bacilli of Nicolaier are refractory to a five per cent. solution of phenic acid in culture experiments, this medicament can not act entirely through its germicidal properties, and, indeed, Baccelli attributes its efficiency to the sedative action it exerts upon the medullary centres.

EARLY AND LATE SUCCESS.

A very common error, or rather misguided expectation on the part of the aspirant for medical honors, is immediate acknowledgment. He looks for a swift recognition, perhaps naturally enough, since exuberant youth always paints with glowing colors and ever talks in hyperbole, without regard for the experience of the past. But in the review of events, can it never be brought home, how many cruel disappointments have there not been, and how much fame is based upon episode. What really, in popular esteem, would the reputation of SHERIDAN have been worth without his "Ride," or that of SHERMAN without his "March to the Sea?" Not that we would disparage, but rather that we would exalt the works which rendered such achievements a possible opportunity. In our own profession, in which theory is so often marred by the immaturity of feeble premises, there are examples certainly more than a score. The real discoveries that have survived have had sufficient life to begin revolutions. Bigotry is the popular clamor, while time, which has wrought so many miracles, is the professional. HARVEY and JENNER encountered opposition, not through jealousy, but from the distrust of the crudities which preceded. They deserved honor for their patience in investigation, but received it for their discoveries. The memory of the learning required has perished with them. It represented a toil which sacrificed many comforts and endured even a penury that might have appalled the determination of PALISSY the potter.

DR. BEARD, misled by statistics which suited his purpose, asserted that every man lost his opportunity for distinction after 40, and cited examples of many who became famous while yet in their youth. This may apply to instances where ardor and dash are concerned, as in military life or in vocations where imagination is a potent

factor, as in oratory or poetry; but it certainly can never hold good where laws destined to govern a wide range of subjects are to be formulated. In medicine, where the experience of predecessors cannot be rated for naught, where truth has so many side-lights, there must be a deal of facts that require collation, and there must also be much rejection of the irrelevant before arriving at a general law. Hence KOCH did not hurry to his conclusions, but prudently waited with the risk of a life untimely ended. Obviously no law can operate before its statement—he therefore wrought long and patiently.

In many departments of science, where the masses are the beneficiaries, the results are to be widely applied. Rules may have their exceptions, but may we not agree with PAGET that in the first announciation they are not sufficiently comprehensive? There must be much study, much deprivation of alluring pleasures, and much concentration of energy before the goal looms up above the horizon. How then can the student, beset with the material problems of life, which consume so much time, at once leap into recognition? On the contrary, the physician must wait for his rewards with due and circumspect modesty, consenting to deserve rather than to possess. To be sure, there may be shorter cuts, particularly to wealth—there may be the aid of business arts; there may be a shoving of wares possibly by street criers, but there can be no solid gains in reputation or even in self-respect. But few charlatans have died wealthy.

Hard, indeed, is it for the majority to toil without the prospect of immediate reward, but the doom of those who deal in the vague or intangible, cannot expect gratifying results, when sturdy growths are so slowly evolved. He builds well who builds solidly.

Early successes are seldom enduring, and in verification of this statement, history is constantly multiplying its examples. It is he who, though baffled by many failures, who still perseveres and, provided life is long enough, succeds at last. If he builds not the structure he yet adds something to the material which others may use. SIR BENJAMIN BRODIE, and before him JOHN HUNTER, won enduring reputations despite careers which began in poverty and obscurity. As some one has aptly said, "Your great men are always surprises." Let us therefore work and wait, for work has its pleasures, and waiting its reward.

AN UNUSUAL COLORADO WINTER.

The past winter in Colorado has been a surprise to the older residents of the State. The rains of November, succeeded by snow in December, and the paucity of clear days, have caused misgivings lest the type of the climate shall be changing from dry to humid, and from bright to dismal. There is no absolute fixity about climate anywhere, Colorado inclusive. During recent years there has been a great uniformity in the winter conditions, so much so that many persons have felt like denying the possibility of anything other than bright and bracing weather. The climatological records, however, show that there have been just such wet winters in former, although not in recent years. The inference is therefore fair that the last winter is not an indication of a change in climatic character—in fact, the like may not be observed again for a decade. An absolute fixity of climate is, cosmically speaking, an impossibility. Colorado must have its variations, but their extent and range are less than in the East. The past winter has been one of greater variability than usual, but the type of this variability has been as true to that locality as at many other more easterly points of observation. The excess, as compared with many former years, of winter rainfall and snow has blinded not a few of the newer colonists in Colorado to the fact that there has been a goodly proportion of hours of sunshine in the latter half of the season. Within that time there has been much fine, bright weather, as a partial vindication of those who are in the habit of speaking of Colorado as "the sunshine land," so that of late the advantages of the climate have been sundry, as one might say, and yet not too dry. To speak of a fact that has been observed, there have been days during the past winter when there would be a light snowfall in the morning, and yet the soil would in the afternoon be sufficiently dry to warrant pedestrians to take their exercise without their overshoes; the warmth of the sun and of the occasional wind, called "the chinook," together with the absorbent nature of the soil, speedily effects the obliteration of the lighter falls of snow. One day in February the thermometer marked 80° F. in the shade, and fully 20° higher in the sunlight.

EDITORIAL NOTES.

HOME.

NATIONAL ASSOCIATION OF RAILWAY SURGEONS.—The third annual meeting will be held in Kansas City, Mo., commencing May 1, 1890, and continue three days. Members who expect to read papers at that meeting must send the title of their papers to Dr. E. R. Lewis, *Times* building, Kansas City, Mo., on or before April 1. This course is taken that the programme may be arranged, printed and sent out to each member by April 15. J. H. Duncan, Chairman Committee of Arrangements.

CHANGES IN THE DATES OF MEETINGS.—The annual meetings of the Illinois State Medical Society and of the Medical Association of the State of Missouri, will be held on the *6th* instead of the 20th of May, in order that their members may attend the annual meeting of the American Medical Association, to be held at Nashville upon the latter date. Michigan is now the only State whose annual meeting will be in conflict with that of the Association, and it is to be hoped that a like change will be made there. It is obvious that appropriate action should be had which shall prevent such conflicts in the future.

THE COOPER HOSPITAL AT CAMDEN, N. J.—The hospital at Camden is reported by the *Medical Register* to be the residuary legatee of the estate of John H. Wright, of which the estimated value is not less than one hundred and twenty-five thousand dollars.

THE LITERATURE OF GYNECOLOGY.—The output of the gynecologists, in a literary way, has been summed up by Dr. A. J. C. Skene, of Brooklyn, for the last eight years, in a grand total of 807 books and 7,505 minor articles and pamphlets, or on an average about two books and eighteen articles per week. The *London Recorder* asks the prolific authors to pause for a little period in order that the general practitioner may catch up, or, as the frequent saying is, that he may "get abreast of the times," in regard to this branch of the work.

THREE COURSES OF MEDICAL LECTURES.—In the attainment of a higher standard of medical education, many of our medical colleges are rendering valuable service. The Faculty of Starling Medical College, of Columbus, O., have determined that three courses of medical lectures shall be required of candidates for graduation, after the session of 1890–91. The Faculty of the Hospital College of Medicine, Louisville, Ky., has adopted a similar rule, requiring all students after the session of 1891 to attend three courses of lectures in separate years as a condition precedent to graduation.

DR. L. S. MCMURTRY, formerly of Danville, Ky., who in the development of THE JOURNAL has rendered much valuable service, has removed to 652 Fourth Avenue, Louisville, Ky.

FOREIGN.

INVENTION OF THE MICROSCOPE.—The third centenary of the invention of the microscope will be celebrated this year at Antwerp, where a historical exhibition of microscopes will be held, and public demonstrations will be given of the structure of the instrument and of its development from its first beginnings to its present form.

THE BRITISH MEDICAL ASSOCIATION LIBRARY.—A recent number of the *British Medical Journal* contains a list of "wants" in regard to the files of the growing library of the Association. In order to complete its sets, Volume iv of the American Surgical Association's Transactions, and Volumes vi, vii, and x of the third series of the College of Physicians of Philadelphia, are needed. With his customary energy, Mr. Ernest Hart, editor of that journal, has pushed forward the foundation of a national medical library and has himself contributed to it very generously, as the lists published from time to time have demonstrated.

A PENAL COLONY AFFLICTED WITH LEPROSY.—Leprosy is reported to have found its way to New Caledonia, the French penal colony, and already there are hundreds of cases among the natives and convicts.

MEDICAL ASSOCIATIONS IN CUBA AND CHILI PROPOSED.—The advantages derived by the medical profession by the formation of large voluntary societies have attracted attention in the countries to the south of us. The *British Medical Journal* states that a Medical Association will be organized in Cuba and also in Chili. Of the one proposed in the latter country, it says, the object of the Association is "to give help to all members of the profession or to their families as often as they are in need of it." It will include all the medical men in the country.

TOPICS OF THE WEEK.

MAL-DIGESTION AS RELATED TO FUNCTIONAL DISORDERS.

Dr. W. H. Thomson (*Med. Record*) says: That as a teacher of Materia Medica he had long been in the habit of dividing medicines into two great classes, namely, the organic and functional, the former being those whose special remedial action could never be secured by one dose, but by the accumulated effects of many doses, as bichloride of mercury in syphilis; the latter being those whose entire specific action could be obtained by one dose, as opium. Organic medicines were given for organic diseases, and produced no symptoms of their own; functional medicines did nothing but produce symptoms. Organic medicines showed no effects except in disease; functional medicines produced the same effect in health as in disease.

Neurotics do not Cure.—Neurotics belonged to the functional medicines, relieving symptoms but not curing the disease. Structural changes in an organ produced corresponding functional derangement, but the converse did not necessarily follow, that functional derangements must always have their corresponding structural change.

Distinction between an Organ and its Function.—This became apparent when the difference between an organ and its function was clearly apprehended. One could stimulate or retard the working of an organ, as of the lungs, without affecting its structure. The human body might, in this respect, be compared to a steam engine or a lamp. The function of a lamp was to give off light. This function would be materially modified according to whether the lamp were fed with pure or contaminated oil, although its structure remained unchanged. Thus one could see the error of those who looked forward to the time when the term "functional," as applied to human ailments, should be banished, and a name be given based on the anatomical changes which it is hoped would in all cases be discovered.

The Practical Aspect of the Question.—If every functional nervous disease was due to a distinct morbid change in nerve-cell or fibre, then we must continue to search in the nerve-cell or fibre for that change, and for its causation, and be guided in the treatment accordingly. If, on the other hand, some of these functional nervous disorders were unattended by alteration in the nervous structure, as a poor light might result from bad oil in a good lamp, then we must look elsewhere for the cause and remedy.

Symptoms Distinguishing Functional from Organic Nervous Diseases.—The symptoms of no structural organic nervous disease were ever truly intermittent. For instance, the hemiplegic might show a greater degree of weakness one day than another, but he was hemiplegic nevertheless. Not so with functional nervous diseases. The most skilled specialist might not be able to tell that a given woman was accustomed to having convulsions, or that a vivacious lady would be prostrated with a headache next day. One was no more likely to find a structural change to account for these facts than to find the structural anatomy of cupidity or benevolence. A truly intermittent disease could have no organic basis in the nervous system. Functional nervous diseases, including epilepsy, were due to afferent impressions. If a tumor within the skull caused epilepsy, it was by an afferent impression, as much as if the afferent impression came from the presence of a tapeworm in the intestine. If the disease manifestations were not intermittent, the presumption was that the case was one of organic disease.

Seeking a Toxic Cause.—Affirming that there were purely functional nervous disorders, without any organic change in the nerves, sufficient even to sometimes prove fatal, what, he asked, were the causes? One direction to which he called attention was that of toxic agents developed within the system—a chemical cause. An example was given in which the chief improvement in the patient's condition resulted from diet. The author went on to quote from different chemists and physiologists proving the development of toxic agents in the intestine, urine, etc., agents which produced effects like those of morphine, quinine, etc. Many of them were capable of causing headache, muscular languor, depression of the heart, great depression of spirits, lowering of the temperature, and convulsions. Usually we were protected from self-poisoning through the function of the liver, and among the most efficient antiseptics were the digestive juices of the alimentary tract. This double function of the digestive juices was too often overlooked in combating disease. Derangement of the stomach and bowels, of a direct or reflex nature, he thought preceded the development of the hysterical status in the majority of cases. He had had better success in the treatment of hysteria by medication directed to the alimentary canal for the prevention of toxæmia, than he had ever before obtained from the use of old-fashioned antispasmodics. The same was true, in the main, of migraine. The same principle applied largely to the treatment of epilepsy, but he reserved the elaboration of this idea for a future occasion. —*The American Lancet.*

IS THE GASTRIC JUICE A GERMICIDE?

Drs. Straus and Wurtz have conducted a series of experiments in order to ascertain the action of the gastric juice on the bacilli of tubercle, charbon, typhoid and cholera morbus. The juice from man, dogs and sheep was selected for the experiments. It was found that digestion for a few hours at a temperature of 100° F. destroyed all the germs. The bacillus anthracis was killed in half an hour, the bacillus of typhoid and cholera in under three hours, whilst the bacillus of tubercle bore digestion for six hours, under which time it was still capable of provoking general tubercular infection. Even when digested for from eight to twelve hours the bacillus was still capable of producing a local tubercular abscess, not followed by general infection. Over twelve hours' digestion destroyed it completely. The germicide influence of gastic juice appears to be due to its acid contents, as it was found that hydrochloric acid alone, dissolved in water in the same proportion as it is in gastric juice, proved as active a destroyer of the bacilli. The pepsin appears to have no influence on the germs. MM. Straus

and Wurtz, who publish their researches in *Archives de Médicine Expérimentales*, wisely remind their readers that the germs, when protected by animal and vegetable tissues and introduced into the stomach in ordinary nutrition, are not exposed to so direct and prolonged action of the acid constituents of the gastric juice as in these experiments.

A SERIES OF LECTURES.

The Société de Médecine Pratique, which is one of the oldest medical societies in Paris, has started a series of public lectures on different hygienic subjects, to which the laity, as well as members of the profession, are admitted. The lectures will be delivered weekly by different lecturers, and will be continued to the end of April next. Dr. Dujardin-Beaumetz opened the series by a most interesting lecture on vegetable diet, which was well appreciated by a large audience. He began by showing that it was possible to live exclusively on vegetables, even in a rigorous climate (as exemplified by the inhabitants of Auvergne and of Brittany, where the poorer classes live on scarcely anything else), if milk, cheese and eggs were added. The vegetable diet might be beneficial in defective action of the kidneys or of the digestive canal, in dilatation or other disorders of the stomach, in putrid diarrhœa, or in all maladies characterized by hyperacidity. But while the vegetable diet rendered great service in therapeutics, man was omnivorous, and it was evident that he should suit his diet to climate and necessity.—*The Lancet.*

THE NINETEENTH CONGRESS OF SURGEONS.

The nineteenth Congress of Surgeons is to sit in Berlin in Easter week. It will be opened at noon on April 9th, in the great hall of the university, in which the afternoon sittings will also be held. The morning sittings, which will be devoted to the demonstration of preparations and the exhibition of patients, will be held from 10 till 1 in the University Hospital. Announcements of lectures, etc., should be addressed to Geheimrath Professor Gurlt, who is permanent secretary. On the first day Kappeler, of Münster, will speak on "Ether and Chloroform Narcosis," and Brauns, of Tübingen, on the "Treatment of Tuberculous Joint and Gravitation Abscesses by Injections of Iodoform." The committee will report on the present state of the Langenbeck House project, and the successful acquisition of a site for it.

SPECIAL RATES TO BERLIN.

Those who purpose to attend the International Congress in Berlin may find it for their interest to confer with Dr. Robert Newman, No. 68 W. Thirty-sixth St., New York City, who, with the concurrence of the special committee of the American Medical Association, has been able to secure favorable rates for transportation.

MENTAL ABERRATION IN PARIS.

Dr. Paul Garnier, in a report addressed to the Society of Medical Jurisprudence, has brought to notice the alarming increase of cases of mental aberration that occur in Paris. In the last fifteen years this increase has been more than 30 per cent. The principal causes of the increase of insanity are, according to the author, alcoholism and excessive intellectual work. Mental aberration is a little more common in men than in women. The proportion is fifty-six men and forty-four women out of one hundred lunatics, but this proportion tends to be equalized, as the progression of insanity is more rapid for the female sex than for the male.—Paris Corr. *Boston Medical and Surgical Journal.*

THE BERLIN INTERNATIONAL CONGRESS.

The General Secretary of the Berlin International Congress states that reductions in fares have been arranged for Americans who attend the Congress, through the agency of Brasch and Rothenstein, of Berlin, and of the Hamburg American Packet Steamship Company. The reductions will even be found to apply to travel on this side of the Atlantic. The assistance of the firm named will be given gratuitously to any member of the Congress who may apply to them for particulars as to expenses, routes of travel, and European excursions supplementary to the convention.

IMMUNITY.

During the work of the late Chloroform Commission in India, it is said that while the attendants were attempting to administer spirits of wine to a strong pariah dog, he became excited and struggled violently. None of the assistants could manage him. Dr. Lauder Brunton then approached the dog, who flew at him and bit him severely on the wrist, yet he seized him, held him down, and administered the dose. When he released the dog, the wrist was bleeding from two wounds. Everyone was alarmed, not only at the accident but at its terrible possibilities. "It does not matter," he quietly remarked as he held out his hand to be dressed, "I was accidentally inoculated some twelve years since, hence there is little or no danger."

DEATH OF DR. WM. S. MILNOR.

Dr. Wm. S. Milnor, late Resident Physician at the Philadelphia Hospital, died after a lingering illness superinduced by la grippe. It began with an inflammatory rheumatic affection of the knee-joint, and ended in a pyo-pericarditis. He was attended by Drs. Musser, Pepper and Guiteras. As soon as the latter trouble was recognized the pericardium was aspirated and eight ounces of purulent fluid withdrawn. Upon consultation it was deemed advisable to cut down upon the serous membrane of the heart and insert in its cavity a drainage tube. Dr. John B. Weaver, of this city, did the operation. Dr. Milnor survived for three weeks, dying finally from general exhaustion and degeneration of the heart muscle.

LA GRIPPE is greatly on the decrease in Philadelphia. Most of the large manufactories, etc., are now able to resume work with a full force of help, which a few weeks ago was impossible owing to the then prevailing epidemic.

PRACTICAL NOTES.

RECOVERY AFTER A WEEK'S TOTAL ANURIA.

At a meeting of the Medical Society of the Paris Hospitals on the 14th ult., M. Féréol related a case of a man who, having inherited gout, had on two occasions within the past two months had attacks of suppression of the urine lasting twenty-four hours, preceded by lumbar pains and hæmaturia, and followed by the emission of clear non-albuminous urine and a small calculus. A third attack had lasted for eight days, and during that week he had only passed a few drops of urine. Then the anuria ceased abruptly, and within twenty-four hours he had passed ten litres of watery urine containing 1.4 per cent. of urea, or 170 grammes in twenty-four hours. At the same time he passed a uric acid calculus the size of a pea and several smaller ones. During the week of anuria he had only slight pain in the right side, and the bladder was empty. But there had been evidence of uræmia, as during the last two days there was slowing of pulse to 52, lowering of temperature (37°) in the rectum, mydriasis, and a "subjective sensation of an ammoniacal odor in the urine." The treatment consisted in dry cupping to the loins, electrical applications night and morning, inhalations of fifteen litres of oxygen daily, one litre and a half of milk, half a litre of Vichy water, and half a litre of an alkaline water and Beaujon's diuretic potion; on the sixth day a bath lasting fifteen minutes, on the seventh day a purgative, and on the morning of the eighth day thirty centigrammes of caffein. M. Féréol did not think that the suppression was due to there being only one functionally active kidney, but rather that the passage and impaction of the calculus had caused a reflex inhibition of the secretion from the uninvolved organ. The quantity of urine afterwards evacuated was opposed to the first-named hypothesis. Urea must have accumulated in the blood, for the skin was dry and the bowels confined, except for a watery evacuation following the purgative. Sixteen days later the patient was in fair health save for slight lumbar pain and the daily passage of uric-acid gravel. M. Royet mentioned a case, also a gouty subject, eighty years old, in whom a large number of calculi lodged in the ureter without uræmia or anuria; when the calculi were passed he had successive attacks of anuria, none of which exceeded thirty-six hours. M. Hayem thought the case was opposed to the generally accepted view that an adult secretes in three days enough urinary poison to kill him. Roberts has said that myosis is characteristic of uræmia from suppression, not mydriasis, as in M. Féréol's case. If the amount of potash had been estimated in the urine following the anuria, it would have been possible to test the opinion of Voit, Feltz, and Ritter, who say that the toxic quality of urine is proportionate to the richness in potash salts.

MENSTRUATION AND LACTATION.

The influence of menstruation upon lactation has long been empirically observed. Schlichter brought before the Medical Society of Vienna the results of his scientific study of this subject. At first an average of the constituent of milk in three wet nurses was obtained by careful observation and measurements. Then fifty-two wet nurses were observed during and after menstruation. During a total of two hundred and thirty-three days of menstruation it was discovered that the fluctuations in the quality of the casein, fat, sugar, and other constituents—were less than the normal daily fluctuations. As the clinical observation of the infants did not bring out any decided change, and as some of these even gained weight on milk furnished by menstruating nurses, the author felt justified in opposing the generally accepted view that menstruation occurring after the lapse of six weeks exercises an injurious effect upon the infant, and that the occasionally observed disturbances of digestion in such infants are attributable to ordinary causes. If menstruation occurs prior to the sixth week, or if it is profuse, the nursling suffer distinctly. —*Times and Register.*

TO PRACTISE DEEP BREATHING.

1. Stand erect, the feet separated, the right slightly in advance. 2. Shoulders and head in natural position. 3. Hands lying lightly on the abdomen, the fingers pointing to the umbilicus. Compliance with this rule enables the child to be sure she is using the abdominal as well as the pectoral muscles in respiration. 4. Empty the lungs of air, then close the mouth. 5. Inhale slowly through the nostrils, using abdominal as well as chest muscles. The lungs thus receive the utmost possible amount of pure oxygen and muscles have exercise. 6. Hold the breath as long as possible, and meanwhile use the ordinary calisthenic exercises. 7. Never exercise except with the chest well expanded with air. 8. Exhale slowly, enunciating the vowel sounds as the air passes the lips.

A test for the purity of drinking-water is given as follows by Prof. Angell of the Michigan University: "Dissolve about half a tea-spoonful of the purest white sugar in a pint bottle completely full of water to be tested, tightly stopped; expose it to daylight and a temperature up to 70 degrees Fahr. After a day or two examine, holding the bottle against something black, for floating specks, which will betray the presence of organic matter in considerable proportion."

SOCIETY PROCEEDINGS.

New York Academy of Medicine.

Section on Theory and Practice of Medicine.

R. C. M. PAGE, M.D., CHAIRMAN.

DR. WALTER MENDELSON read a paper on

THE PHYSIOLOGICAL TREATMENT OF OBESITY.

Experience had shown, he said, that under ordinary circumstances and in the temperate zone health is best preserved when the diet consists of a combination of all three of the classes of foods, nitrogenous, carbo-hydrates and hydro-carbons, and that the average proportion of the albuminous to the non-albuminous foods is about 1 to 3½ or 4. The most recent authorities, such as Peltenhofer and Voit, had demonstrated that the albumen of the food is the principal source of the fat found in the body, their investigations having shown that this albumen undergoes, after it has reached the cells of the tissues, certain chemical changes, by which part of it is converted into fat and part goes to the direct nutriment of the tissue cells. It was undoubtedly true that a certain amount of the fat taken as food is stored up; but the increase of body fat occurring after eating much fat—though in part a direct result—was chiefly brought about indirectly, the food fat shielding from oxidation that which had been formed from the albumen ingested. It was in the same indirect manner that the carbo-hydrates acted. Ordinarily the starches and sugars were not themselves converted into fat; only when taken as food along with albumen did this seem to occur. But when taken as food along with albumen, they, being more easily oxidizable than the tissue fat, by preventing the latter from being consumed, gave rise to an accumulation. There were, then, three sources from which fat might be derived for the body: (1) From that resulting from the splitting up of the albumen of the food; (2) from the transfer of that fat ingested as food, and (3) probably from fat formed from starches and sugars when these are taken in large quantities.

In the treatment of obesity, he said, we must consider the individuality of the patient and use great care to suitably regulate the diet and exercise, having in mind that the change we wish to bring about, to be beneficial, must be gradual; that the cells must be educated by degrees to the new duties we wish them to perform, and that anything approaching starvation—like the Banting cure—is to be condemned. With regard to diet, he went on to say, it must be our general plan to give much albumen and relatively little non-nitrogenous food, doing this in order, firstly, that the cells, from the abundance of nourishment brought to them, shall be capable of great chemical activity; and, secondly, that the tissue fat thus necessarily formed shall not be preserved from oxidation by the presence of the more readily oxidizable food fat and starches. We should always keep in mind, however, that as the fat of the body becomes by this process gradually reduced, the diet must undergo a corresponding change, more and more of the non-nitrogenous foods being allowed as the body grows relatively richer in albumen and poorer in fat; for unless this be done, a point will be reached where not only the fat of the body, but the albumen as well, will be consumed, and the patient, after feeding thus on his own muscular and glandular tissues, will begin to complain of weakness and lassitude. It is important to remember that the patient should always feel better, never worse, under treatment, and that the desired change cannot be brought about quickly. All reforms, to be lasting and beneficial, must be slow in action and the result of education; they must be a growth from within, and not an impress from without.

DR. L. F. BRYSON read a paper on

THE PRESENT EPIDEMIC OF INFLUENZA.

In the discussion on it Dr. C. L. DANA said that the journals had told us that the epidemic began in St. Petersburg about the middle of November, and he believed it was about the middle of December that the disease made its appearance in New York. In his experience the whole course of this affection showed conclusively that it must be due to an infectious germ. If we could draw any conclusions from analogy, influenza, like other specific diseases, was caused by a specific microbe of some form or other; but if this was the case, it was manifestly impossible for such a contagium to travel from St. Petersburg to New York in the short space of one month. In order to accomplish this feat it would have to be a much more rapid traveler than any known form of contagion. We were, therefore, forced to a second conclusion, viz: that the germ has been in this country. The microbe of influenza was not a thing borne by the wind or carried by individuals, as the cholera germ was, but it was distributed throughout the world.

There seemed to be further concerned in the production of the disease some epidemic influence, whether telluric, electric, or what not, although the speculations on this point had not as yet proved very fruitful. He understood that in Vienna it had been claimed that the specific microbe of la grippe had been found, though it had not as yet been found to be capable of reproducing the disease. He did not believe, however, that this important discovery had yet been made.

He then proceeded to speak of his own experience as regards the nervous manifestations of the present epidemic. A Russian authority, he said,

had divided the cases into three classes, nervous, catarrhal and gastric. As far as he had been able to learn, the catarrhal and gastric varieties had been met with here, but the purely nervous form did not seem to have appeared, or at least to any noticeable extent. He had met with one case in which there was no chill (though some chilly feelings) or fever, and no catarrhal trouble, but in which almost the only symptom was excessive weakness. He had seen one patient in whom mania appeared after grippe, and another in whom encephalitis developed. In the newspapers, also, several cases had been reported in which mania accompanied the disease. In one case which he saw facial paralysis occurred, and in a child there were symptoms of poliomyelitis. He believed that in this instance, however, there was nothing more than a congestion of the spinal cord, caused by the epidemic influence. He had met with a good many cases of facial neuralgia, but they all seemed to be associated with the affection of the nasal passages. The most characteristic phenomenon of the epidemic was the prostration so commonly met with, and this he believed to be the effect of the specific poison of the disease upon the heart, as was the case in other zymotic affections.

Dr. W. P. NORTHRUP spoke of the ages of the patients attacked. In the New York Foundling Asylum, where there were between 700 and 800 inmates, not a single diagnosis of influenza had been made among the children under 2 years of age. Some of them, which were net-nursed by women suffering from the disease, fell away a little, and occasionally there was a moderate attack of diarrhœa among them; but this was all. Among the "run-abouts," however, children from 3 to 5 years of age, something like 15 or 20 per cent. suffered. The attack was usually characterized by moderate febrile movement and more or less bronchitis, but all the children rapidly and completely recovered. Almost the entire number of those affected came down with the disease within the space of two or three days. After that there were but two or three sporadic cases. It was noticeable that there were more than the usual number of pneumonias in the house at this season of the year; but, on the other hand, the disease was less fatal than usual.

Among the adults in the establishment who were affected with influenza all the severe cases occurred in those between the ages of 18 and 25. Of the entire number of inmates who were from 2 to 25 years of age about 80 per cent. had the disease, though many of the cases were very mild. In one case there was a well marked erythematous eruption. In this instance the temperature rose to 103°, there was green vomiting and ærgina, and the whole attack closely resembled scarlet fever. Among the young women there were several severe cases of pneumonia and one case of Bright's disease. One curious feature about the epidemic in the Foundling Asylum was that all the wards were visited by it except one. In this ward there were sixteen "run-abouts," six nurses and numerous infants, but not a single case occurred there, although there were many cases in the wards just above and below it. It was also worthy of note that in the fraternity none of the pregnant women were attacked.

Out of fifty-two old ladies at a Home where Dr. Northrup attends only two suffered from the influenza. These two cases were of moderate severity, but typical in character. Among the attendants at this institution six out of fourteen had the disease and were quite ill with it. In private practice he had seen one case with the eruption. It was a papular erythema, symmetrical on the two sides of the body, and attended with much itching and burning.

As to the treatment, he desired to say that he had not used one grain of antipyrin among his patients. The reason for this was the unfortunate experience which he had once had with this remedy. In this instance he prescribed 15 grs. of the drug, and it produced extreme depression, so that the patient became pulseless, and he was much alarmed. Notwithstanding this untoward effect, the patient was willing to take 5 grs. of antipyrin afterward, and in this quantity it gave rise to a troublesome and painful urticaria and to such distressing dyspnœa as he had never seen except in occasional cases of Bright's disease.

DR. T. R. POOLEY said that he had himself been affected with the disease, and when the attack came on he took great interest in studying the eye symptoms, which he learned afterwards were such as were frequently met with in the epidemic. There was a deep-seated sense of pain in the orbit, and the movements of the eye were accompanied with much pain. There was also very marked asthenopia. The symptoms referred to were only transient, and it had not yet been shown that any permanent disease of the eye ensued. He supposed the trouble to be simply a weakening of the ocular muscles, such as was met in other diseases producing exhaustion. He had met with only one or two cases in which the conjunctiva was affected, and in these he thought it very possible that the patients had had catarrhal conjunctivitis before they were taken with the influenza.

He had of late seen an unusual number of cases of acute inflammation of the middle ear, and they all seemed to be attributable to the effect of the epidemic and to be connected with catarrhal inflammation of the throat and air passages. In most cases examination showed hyperæmia of the drum head, and in some instances there was perforation of the latter.

DR. O. D. POMEROY said that he had met with a larger number of cases of ear trouble than of

eye trouble as a result of the influenza. Both these classes of affections seemed to occur some little time after the disease had spent its force. At the Manhattan Eye and Ear Hospital he had seen six or seven cases of catarrhal conjunctivitis, and one case of very severe ulceration of the cornea. In one case not in his own clinic there was complete ecchymosis of both eyes, such as was sometimes observed in whooping-cough, where it was no doubt due to rupture of the blood-vessels from the violence of the cough. In the case in question also the patient suffered very greatly from cough. All the principal symptoms noted by Dr. Pooley had likewise been observed by himself.

As regards the ear, purulent otitis of an acute character was quite common. In this the discharge was very great, and spontaneous rupture of the drum head not infrequently occurred. The purulent cases were about twice as numerous as the catarrhal ones. The former were apt to be very violent in character, and in one instance he had met with there was mastoid peritonitis. The ear symptoms seemed on the whole to be more frequent and of a graver character than was the case in scarlet fever; and they are all probably caused by the spreading of an inflammatory process from the throat through the Eustachian tube, and thus affecting the middle ear.

In answer to a question by the chairman, DR. FRANCIS DELAFIELD said that he supposed every one had been struck with the frequency with which both bronchitis and pneumonia had occurred in the epidemic. As regards the bronchitis there were two things which had repeatedly attracted his attention. The first was the very satisfactory way in which the apparently very bad cases got well. Often there was great difficulty of breathing, with considerable rise of temperature, and expectoration of blood as well as mucus. Yet he had been surprised to see how well such patients had done, and in what a comparatively short time improvement began to take place. The second point was the number of individuals who, while they had a general bronchitis as far as the large tubes were concerned and localized bronchitis involving the smaller tubes, remained free from any implication of the lung tunic. This class also, in his experience, had done well.

As to pneumonia, he thought that every one must have been impressed with the fact that almost all those who were attacked by it had a great deal of bronchitis with the pneumonia. In these cases of pneumonia there was a considerable difference, and he had observed altogether four classes.

In the first the cases were very mild. The temperature did not run high, and there was very little dulness on percussion. There were some subcrepitant râles over a portion of the lung; but these cleared up within a few days.

In the second class of cases the patients did not seem to be very ill, and did not have a very high temperature, but they had considerable bronchitis and perfectly well marked consolidation of one lobe for one or two weeks; after which they got well.

The third class was composed of those which had fully developed pulmonary consolidation which went on for quite a long time. The temperature rose perhaps to 104, and did not go down. After ten, or even twenty days, it would still be found that the consolidation had not cleared up. In many instances, however, even after this very long period, the lung did clear up, and the patient got well.

The fourth class was made up of the very bad cases. In most of them, together with the pneumonia, there were evidences of a great deal of bronchitis. The action of the heart was poor, and there were collections of blood in the veins. When this condition had been established the heart's action was rapid and feeble, and expectoration became suppressed. Such patients seemed to do badly, no matter what course of treatment was pursued. Some seemed to be relieved for a day or two, and then the grave symptoms all came back again. In a smaller number death occurred as in ordinary lobar pneumonia.

DR. LOCKWOOD spoke of the great usefulness of antipyrin in relieving the neuralgic pains so constantly met with in grippe, and stated that for the cough he had found muriate of ammonia, in combination with other remedies, of the greatest service.

DR. WOOD said that he thought a note of warning ought to be given in regard to the use of antipyrin. This, he was convinced, was an agent which was quite capable of complicating the disease very seriously a little later on in its progress, if it did not at the outset. Its administration was apt to be followed by cold perspiration and a relaxed condition, and if much bronchitis were present it was liable to produce great depression unless employed with extreme caution.

FOREIGN CORRESPONDENCE.

LETTER FROM PARIS.

(FROM OUR REGULAR CORRESPONDENT.)

Dr. Gautier on the Properties of Cod Liver Oil—Dr. Leudet on Phthisis—The Non-Operative Treatment of Anal Fistula—Cure of Intestinal Occlusion by Enemata of Sulphuric Ether.

At a recent meeting of the Academy of Medicine Dr. Gautier read a note on the properties of cod liver oil, and the following are the principal conclusions: 1. It is certain that it is not only to the alkaloids and to the morrhuic acids that

the cod liver oil contains that is due its undeniable reparative activity. 2. It acts by its fatty substances, which are very easily assimilable, thanks to their slight acidity, to their partial saponification, and to the dissolution in the oil, to a certain quantity, of biliary matters, which render it extremely easy to form an emulsion, particularly when in contact with the ferments of the pancreas. These fatty substances, so easy of digestion, ready to be assimilated, are protective agents, forming reserves to be accumulated in certain tissues and to be utilized by the economy, which, to meet its incessant wants of calorification, borrows the heat which is necessary for the destruction of the materials of the cells. 3. These oils act as energetic repairers by their richness in phosphates, in phospho-glyceric acid, in lecithine and in phosphorus, combined or in an organic state. It is in this latter form that the economy assimilates more easily this indispensable aliment, which presides over the perpetual renovation of the tissues. It is known that in phthisical, scrofulous and rachitic subjects, as well as in cachexia, the disassimilation of the salts of lime, and principally the calcic phosphates employed by these patients, cod liver oil furnishes them an incessant provision of phosphorus under the form in which it exists in milk, the yolk of egg, the brain legumine, caseine; that is to say, in the same state in which it can be directly utilized and assimilated by the organism. 4. In fine, these oils of the cod's liver, by their alkaloids, the most important of which is morrhuine, and by morrhuic acid, excite the nervous system, accelerate denutrition, increase considerably the quantity of urine and of the perspiration excreted, and increase the appetite, as has been experimentally demonstrated. 5. It is true that among the alkaloids of cod liver oil there are some—amylamine, for example—which are dangerous poisons. The causes of the efficacy of cod liver oil may, therefore, be summed up thus: Sensible augmentation of the appetite and of the renal, endoral and intestinal secretions under the influence of its principal alkaloids; rapid assimilation of phosphoric principles presented to the economy under the form of lecithine and other organic phosphatic matters directly utilizable by the young cells; powerful reparation of the reserves of calorification, thanks to the easy absorption of fatty substances.

In a note read by Dr. Leudet at the Medical Society of Hospitals on phthisis, regarded as a hereditary and contagious disease, the author brought to notice the remarkable fact that phthisical subjects supported the influenza better than others. At this time of the year, however, they furnish an important contingent in the general mortality. According to Dr. Lagneau, 21 per cent. of the total number of deaths in Paris during the year 1888 may be attributed to tuberculosis. The same report shows the number of young men of the departments of Var and of the Bouches du Rhone who are exempted from military service on account of diseases of the chest or of weakness of the constitution. This number is double that of the other departments, and consequently it becomes urgent to examine whether the consumptive subjects who pass their winter on the shores of the Mediterranean are not infecting the inhabitants. Dr. Leudet believes, on the contrary, that the cases of contagion of tuberculosis are extremely rare. Dr. Vallin is of opinion that with the facts published to the present time it is difficult to say how much the development of tuberculosis is due to heredity, and how much to contagion.

Professor Guyon lately read a paper before the Société de Chirurgie on the non-operative treatment of anal fistula. The author advises that fistulæ which do not give rise to distressing symptoms ought not to be operated upon. The non-operative treatment consists in rendering the stools soft and regular, and in insisting upon scrupulous cleanliness. The constitutional treatment consists in the administration of iron associated with the bromides, and he recommends the following formula: Potassii bromid, 10 grams; fer. ammon. cit., 50 centigrams; syrup aurant, 100 grams. One tablespoonful to be taken twice a day. After each motion one of the following suppositories should be introduced into the rectum: Iodoform, 10 centigrams; ext. belladon., 2 centigrams; ol. theobrom., 180 centigrams.

Before the Therapeutic Society Dr. Clausi gave an account of two cases of intestinal occlusion cured by enemata of sulphuric ether, after having unsuccessfully tried all the other means habitually employed in these cases. The following was the author's mode of procedure: After having dissolved 10 grams of ether in alcohol and having added to it 300 grams of distilled fennel water, he introduced into the rectum, as high up as possible, an elastic tube, and then, with an ordinary syringe, he injected the liquid into the intestine. The patients experienced a painful sensation of heat diffused all over the abdomen, and almost immediately after they had returns from the stomach having the characteristic odor of ether. In a short time this was followed by abundant evacuations of fæcal matter, with the disappearance of the colicky pains and all the other morbid manifestations. The criterion which guided the author to employ sulphuric ether was founded on its physical and physiological properties, which rendered it as a means very efficacious to excite the peristaltic movements of the intestine, an essential condition to overcome an occlusion; and this, either because it directly excites the terminations of the motor nerves of the intestine, or because, having its point of ebullition at 35° C., the internal tem-

perature of the body, the ether should pass rapidly to a state of vapor with a great force of tension; and in producing the sudden and rapid distension of the intestine it is obliged to act by contraction, and can thus overcome the obstacle which opposes the free passage of the fæcal matter.

DOMESTIC CORRESPONDENCE.

Audi Alteram Partem.

The Climatic Causation of Consumption.

To the Editor:—I have been anxious to read Dr. Baker's paper upon "Climatic Causation of Consumption" ever since I first heard about it. At Newport, during the last meeting of the Association, a friend saluted me with "Doctor, your avocation is *busted*. Go home and take down your shingle, Baker, of Michigan, has just read a paper proving that consumption is caused by *cold, dry air*." Now, it is not because of any fear of this jocose prediction being realized that I am writing to you, but for the reason that I was kept from hearing Dr. Baker's views by having to read a paper myself in another Section. I suppose my medical friend has voiced the expectation of others who know me that I would answer such an argument, coming from one who has both time and statistical data at his command for purposes of classification, as no one else has in America, because I have repeatedly taken the opposite ground in medical papers I have written.[1] This much by way of explanation. I would have presented the following objections to part of the paper mentioned had I been present at its reading. To a resident of Colorado it seems absurd that the English language can be so twisted as to seem to fairly indicate the conclusion that *cold dry air* is the cause of what we know in thousands of cases it has cured, namely, consumption; yet here it is in the last issue of your JOURNAL, January 18th, "The Climatic Causation of Consumption," by Henry B. Baker, M.D. The new theory is sandwiched in between the Bowditch and Buchanan soil moisture cause, and the Koch tuberculer bacilli idea, and made to harmonize with Dr. B.'s conclusions by means of an extensive array of statistics, which I simply believe are misapplied.

Lack of time compels me to forego the elaboration of the objections which occurred to me as I yesterday for the first time read this paper. I do not refer to the other two causative influences mentioned, which are generally accepted as proven, but to Dr. Baker's peculiar ideas, including the suction of chlorides towards the lungs in pneumonia *by cold dry air*, I can only summarize my points.

Firstly, and here lies the fault of his second conclusion that cold dry air can cause consumption. Is it not an assumption, as a premise of what follows, to throw out *relative humidity*, as Dr. Baker does, and to consider *absolute humidity* alone? I have thought myself a defender of *absolute humidity*, and in the rating of it with relative humidity and cloudiness of the air, to illustrate the shades of moisture and dryness on my climatic charts.[2] I considered that I had been amply generous in giving it a little more than a third of the combined rating influence. This total annihilation of relative humidity, however, which we have now to deal with, is an arbitrary proceeding which invalidates every after conclusion depending upon such a premise. For if the air is dry because it is cold, even though it is produced by the damp emanations from a saturated soil, as Dr. Baker puts it, "Realizing the fact that over the *low wet soil* there is generally a *cold dry atmosphere*," then why cannot the term "dry" by given to a London fog, the air of the Mammoth Cave (58° F.), or any other kind of atmosphere this side of a Russian bath? One can prove anything if relative humidity is left out. According to our author, any air that is of low actual weight of moisture to the cubic foot is "dry." Are not things what they seem? Has not the sensational effect of cold increased, as we all know it is, by high relative humidity, any place whatever in this consideration?

Secondly, Is it not an assumption to conclude that because the death-rate from consumption and exudative lung diseases is increased after or with cold weather, that the cold was the direct cause of this? Personally I feel like combatting the universal idea that we *catch cold*, and to claim that we always *catch hot* first. It is an everyday experience with everybody that the relaxation due to fatigue, over-exertion, low-resisting state or heat which renders the subsequent exposure to *cold* dangerous. It is sufficient simply to ask this question—was it not an indirect effect only of cold that drove people *indoors* where in confinement they suffered the carbonic acid poisoning, defective elimination and tubercular infection which largely contributed to the increased mortality mentioned, and which never could have happened in the *cold out door air*? In this regard the doctor's classification of small-pox with consumption is most unfortunate for his theory of the causation of the latter disease; for do we not all know, from whatever of experience we may have, that the contagiousness of small-pox is favored above all other means by the close and

[1] "Rocky Mountain Health Resorts," Houghton, Mifflin & Co., Boston; "Moisture and Dryness," Report to American Climatological Assn., 1884, Rand, McNally & Co.; "The Preferable Climate for Consumption," from Transactions of the Ninth International Congress; reprinted by the Colorado Legislature (copies furnished an application to Secy. State Board of Emigration, Denver, Col.)

[2] "The Annual and Seasonal Climatic Charts of the United States," Rand, McNally & Co., Chicago, Publishers.

heated apartments of the poor? In illustration, an epidemic of small-pox a year ago made its way to different habitations in Denver from a certain gambling room, where some infected tramps from a neighboring city tarried. Does anybody pretend to say that moist cold or dry cold air had any other than an indirect causative effect in spreading that small-pox?

Thirdly, Is it not obviously unreasonable to exclude from this consideration the remarkable effect cold has upon the extended cutaneous surface of the body? May not the revulsive influence of cold *on* the body account for as much or more than the effect of cold *in* the lungs? Yet there is nothing in this extensive analysis of the influence of cold except reference to effects *within* the lungs. The only way I can account for this important omission is the author's statement, "It seems to be difficult for the human mind to grasp more than one idea at a time."

Fourthly, Is not the effect of Dr. Baker's so-called *dry cold* air upon pulmonary tissues overstrained when a suction power is attributed to it sufficient to draw the chlorides into the exuded deposits characteristic of croupous pneumonia and thus account for the absence of these chlorides in the urine? 1. Because such supposed power of cold dry air is not constant or ever present in acute pulmonary affections. 2. Because the behavior of the chlorides in pneumonia does not have to be explained in this peculiar way. 3. Because croupous pneumonia is most likely an infectious disease depending upon a malarious element in the air or in the patient's blood, for its peculiar manifestations, perhaps even for the behavior of the chlorides. 4. Because the statistics of deaths from croupous pneumonia, could they be obtained, would overwhelmingly show that really dry sections (relatively as well as absolutely dry, such as found at high altitudes), would give less than one tenth the mortality of warm moist localities. (See statistics of United States census for proof of this, notwithstanding the undoubted fact that in those statistics catarrhal and intustitial pneumonias, bronch. pneumonia, bronchitis and pleurisy complicate the pneumonia records.) If croupous pneumonia is infectious, its causation of course cannot then be explained by this mis-called *cold dry air*. 5. Because the inhaled atmosphere could not reach the ærating portions of the lungs as *cold dry air* to have the peculiar effects attributed to it. In ordinary breathing the ratio of inhaled air to that already contained in the lungs is not much if any more than 10 per cent. and the process of heating and mixing these currents of air is both constant and rapid. The remarkable transpiration of moisture from the lungs in really cold dry air[3] is not only a constant effect in bronchitis, catarrhal and intustitial pneumonia as well as in health and in croupous pneumonia, but in chronic infiltrations and slight tubercular lung lesions it is believed to be curative by every physician of any ability in this part of the country from Wyoming south to New Mexico. No doubt that where tuberculariza tion is so localized or concealed that the curative cold dry air cannot reach the seat of the disease and thus can offer no check to its progress, that activity may be rather increased than diminished through the stimulation of both heart and lungs due to cold and elevation above the sea; and in these cases, as in phthisis in Florida and acute miliary tubuculous, should of course not be sent to high altitudes. The everyday experience of these physicians is so decidedly to the contrary that no further excuse is needed for refuting a statement like the following, quoted from Dr. Baker's article: "The specific cause of consumption apparently and probably finds lodgment in the lungs and air passages, other things being equal, in proportion to the coldness and *dryness* of the atmosphere; and not only this, but the danger of auto-infection and of death to one in whose body the disease is already present is increased by exposure in an atmosphere unusually *cold and dry*, while the condition of the blood is such that saline and albuminous exudates are liable to occur in the air passages."

While I have both respect and friendship for the author, I feel compelled to say the above statement is groundless, being based upon a false premise and consequently the resulting generalizations (3, 5 and 8) are not sound, that the conclusions are contrary to experience and for reasons herein stated do not appear to be established, as claimed, by the valuable statistical tables presented.

CHARLES DENISON.

Denver, Col., Jan. 22, 1890.

NECROLOGY.

Edwin Arius Kilbourne, M.D.

Dr. Edwin Arius Kilbourne, Superintendent of the Illinois Northern Hospital for the Insane at Elgin, died February 27, 1890, at that place, in the fifty-third year of life. Born in Vermont, he was practicing dentistry and studying medicine at the opening of the war in 1861, and enlisted as a private, soon rising to the rank of Captain, and served a long term as Judge Advocate in the Courts Martial. After the war he resumed his medical studies, graduating from Ann Arbor and also from the College of Physicians and Surgeons of New York. For a long time he was assistant physician at the New York City Insane Asylum on Blackwell's Island, and made a short trip abroad, finally locating for the general practice of

[3] See tables 1 to 3 giving differences in moisture exhalation in *cold dry* as compared with *warm moist* atmospheres pages 4 and 5 in essay already mentioned, "The Preferable Climate for Consumption."

medicine in Aurora, Ill., and was shortly thereafter, in 1872, appointed Medical Superintendent of the Northern Hospital, a small portion of which was just completed and ready for patients. In this capacity he has been connected with that institution up to the time of his death, watching, directing and fostering its growth with a devotion and absorbing interest which did much to make him prematurely old and open for him an early grave. Under his stewardship the hospital has attained an enviable reputation as a well conducted and admirable institution of its sort. His spirit was essentially progressive, so that reforms in the management, treatment and care of the unfortunate class committed to his hands found in him an early advocate and exemplar. He was possessed of extraordinary executive ability, great force of character and, above all, a comprehension of details which did not permit him to take the least rest and led him often to unnecessary worry and anxiety. His interest in the hospital and all that concerned it, indeed, was his whole life, and to it he devoted the best years and energy of his career. He has reared up a reputation for unquestioned probity which will be a monument to his memory, a sacred inheritance to his children and a bright example for his successor.

A rigid disciplinarian, he never spared himself, and it was in visiting a county jail in February, 1884, that he incurred an illness from which he never fully recovered, and during the last year of his life broke down physically and mentally, fortunately never seeming to realize the great change that had come over him. The immediate cause of death was apoplexy. Strangely, a sister, who with himself were the sole remaining members of his father's large family, died in Iowa only three hours before his own death. A widow, two sons and a daughter survive him, abundantly provided for by his judicious investments and a large insurance.

Richard D. Lee, M.D.

Dr. Richard D. Lee, a physician of high standing in Harford County, Md., died in the midst of his daily tour of professional duty; he died in the harness, as the saying is. He was found dead, probably through heart failure, in his carriage in the public road, near Bell Air. He was a graduate of the Washington University School of Medicine in 1848.

MISCELLANY.

MISSOURI STATE MEDICAL ASSOCIATION.—The thirty-third annual meeting of the Medical Association of the State of Missouri will be held at Excelsior Springs, Clay county, Mo., May 6, 7 and 8, 1890.

(Signed) L. J. MATTHEWS, Pres't.
J. C. MULHALL,
JOSEPH SHARP, Secretaries.

LETTERS RECEIVED.

J. G. Waters, Topeka, Kan.; Dr. Paul L. Brick, Le Mars, Ia.; Dr. L. F. Mansfield, Watertown, N. Y.; Dr. Theodore Diller, Danville, Pa.; First National Bank Stanford, Ky.; Dr. D. B. St. John Roosa, New York; Dr. Carl Seiler, Philadelphia; R. L. Polk & Co., Chicago; Dr. J. R. Holgate, Castleton, Ill.; The Advertisers' Association, Elmira, N. Y.; Longmans, Green & Co., New York; Dr. W. B. Henderson, Pittsburgh, Pa.; Dr. J. Chancellor Gilbert, Wessington, S. D.; Dr. H. C. Neer, Park Ridge, N. J.; Dr. Geo. W. Hinkle, Harvard, Ia.; Dr. D. Bryson Delavan, New York; Dr. J. B. Maxwell, Chicago; Dr. C. C. Lapeer, Braymer, Mo.; Atlantic-Pacific Railway Tunnel Co., New York; Dr. J. Z. Gerhart, Harrisburg, Pa.; Paris Medicine Co., Paris, Tenn.; Reed & Carnrick, New York; Dr. A. R. Baker, Cleveland, O.; Dr. J. C. Wilson, Philadelphia; Dr. J. P. Henderson, Salem, Ind.; Dr. R. S. Anderson, Grove City, Ill.; Dr. C. F. Darnall, West Union, Ia.; Dr. A. W. Nelson, New London, Conn.; Dr. S. P. Deahofe, Potsdam, O.; Dr. G. F. Cook, Indianapolis, Ind.; Dr. I. R. Spooner, Lake Preston, S. Dak.; Dr. L. G. Webber, Jamaica Plains, Mass.; F. A. Davis, Philadelphia; F. W. Nostrand, New York; Parke, Davis & Co., Detroit, Mich.; Rigaud & Chapoteaux, Paris, France; Dr. T. L. Wright, Bellefontaine, O.; University of Wooster, Cleveland, O.; Dr. H. A. Smith, Cincinnati, O.; George F. Lasher, Philadelphia; Dr. N. V. Spicer, Quincy, O.; J. H. Bates, New York; Philadelphia Truss Co., Philadelphia; Ed. L. Huntly & Co., Chicago; Mrs. J. A. Gorgas, Rogers Park, Ill.; National Type-Writer Co., Boston; Dr. I. N. Love, St. Louis, Mo.; Jackson County Medical Society, Kansas City, Mo.; T. J. Van Horen & Co., New York; James O'Gorman, Baltimore, Md.; Dr. J. C. Fisher, Warsaw, N. Y.; Dr. F. A. Merrill, Boston; George Tiemann & Co., New York; Dr. P. R. Cortelyou, Marietta, Ga.; Dr. Llwellyn Eliot, Washington; C. W. Holmes, Elmira, N. Y.; Dr. E. L. Shurley, Detroit, Mich.; Dr. L. L. Radcliffe, Washington; Dr. D. N. Rankin, Allegheny, Pa.; Dr. H. C. Mooney, Laketon, Ind.; Dr. C. H. McClees, Marne, Ia.; Dr. N. S. Stair, Ft. Atkinson, Wis.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from March 8, 1890, to March 14, 1890.

Capt. J. Van R. Hoff, Asst. Surgeon, is granted leave of absence for one month. Par. 1, S. O. 26, Hdqrs. Dept. of the Missouri, Ft. Leavenworth, Kan., March 5, 1890.

First Lieut. Edward R. Morris, Asst. Surgeon (Ft. Shaw, Mont.), is granted leave of absence for one month. Par. 1, S. O. 28, Hdqrs. Dept. of Dakota, St. Paul, Minn., March 7, 1890.

By direction of the Secretary of War, Capt. Junius L. Powell, Asst. Surgeon U. S. A., is relieved from duty at Ft. Supply, Ind. Ter., to take effect at the expiration of his present leave of absence, and will report in person to the commanding officer, Ft. Randall, S. Dak., for duty at that post, and by letter to the commanding General, Dept. of Dakota. Par. 8, S. O. 56, A. G. O., March 8, 1890.

By direction of the Secretary of War, Capt. Rudolph G. Ebert, Asst. Surgeon, now on sick leave of absence, is relieved from duty at his present station, Ft. Pembina, N. D., and will report in person to the commanding officer, Angel Island, Cal., for duty at that station. Par. 1, S. O. 57, A. G. O., March 10, 1890.

Capt. W. B. Davis, Asst. Surgeon U. S. A., leave of absence for seven days granted by order No. 9, Ft. Preble, Me., March 7, 1890, is hereby extended ten days. Par. 6, S. O. 58, Div. of the Atlantic, March 12, 1890.